

THE INFLUENCE OF LANGUAGE ABILITY,
AGE AND SOCIOECONOMIC STATUS
ON LANGUAGE USE

by

RETA JANE LEBERMAN

A DISSERTATION PRESENTED TO THE GRADUATE COUNCIL OF
THE UNIVERSITY OF FLORIDA
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1980

In Loving Memory
of My Father,
Edward L. Fiedler

ACKNOWLEDGEMENTS

During my tenure as a graduate student, many individuals are credited to my personal and professional growth. To Dr. Thomas Abbott, I am especially grateful for his encouragement and guidance throughout my graduate career and his willingness to assume the "long distance" chairmanship of my supervisory committee in the final stages of my research. To the remaining members of my committee, Drs. Anthony Clark, Joyce Warner and Leonard LaPointe, I wish to express my sincere thanks for their suggestions and helpful comments during the initial stages of this project and their encouragement and understanding during the hectic final days. Dr. Edward Hutchinson, who introduced me to the important study of language use, who served as the original director of my doctoral committee and who has been an understanding department head since I joined the faculty at Appalachian State University, deserves my heartfelt thanks. He has been my colleague, my friend and my mentor. He has seen me through the dark times that accompany any project which makes one feel tiny and incapable at its inception. He has encouraged me through the gray days of writing and revising. With scholarly advice and with a wise blend of sympathy and sternness, he has helped me insistently to bring this project to its conclusion.

I would also like to extend my appreciation to Brenda Brown for her excellent statistical assistance. She was always available to help and her expertise was invaluable. Valerie Bulow, Geneva Benson and Susan Wynn unselfishly gave of their time to type the original

manuscript and Black Lending provided outstanding editorial assistance while typing the final draft. Thanks next also is extended to the faculty, staff and children of the schools which participated in this project. They made us feel a pleasant and enjoyable one.

Finally, my love and endless gratitude to my husband, Chuck, who never stopped believing in me; to my parents and my husband's parents whose long and patient wait has at last been rewarded with "teaching" from history to my son, Justin, whose unconditional hugs and kisses never distended even in the face of a cranky mommy; to my dear friends, Ben Michael, whose kind and encouraging words were a constant source of encouragement on dreary those days, Ricky Rosellera, who shared in teaching responsibilities during the summer of '81 to provide me with precious time, Kathy and Wayne Weber, who handcarried this manuscript from the Trailways bus station to the University of Florida editorial office on several occasions and whose kind hospitality gave me the peace of mind to remain calm during the weeks of my oral defense; and to all my other friends and family, without whose support this project would not have been possible.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	vii
ABSTRACT	ix
Chapter	
1 INTRODUCTION	1
Significance of the Problem	1
Statement of the Problem	4
Delimitations	7
Limitations	8
Assumptions	8
Hypotheses	9
Hypothesis 1	9
Hypothesis 2	11
Hypothesis 3	13
Hypothesis 4	15
Hypothesis 5	17
Hypothesis 6	18
Hypothesis 7	19
2 REVIEW OF RELATED LITERATURE	20
The Interdisciplinary Nature of Recent Research into Language Use	20
Expanding the Notion of Competence	21
Origins of the Study of Language Use	22

Chapter	Page
The Status of Language Research	23
Functions of Language	26
Speech Acts Theory	37
Development of Language Use in Language-Normal Children	53
Development of Language Use in Language-Impaired Children	66
Primary Forms	66
Conventional Forms	68
Language Use in the Cultural Context	73
Measurement of Language Use	81
Standardized Assessment Strategies	84
Nonstandardized Assessment Strategies	85
The Literature in Retrospect	89
3. METHODS AND PROCEDURES	91
Subjects	92
Language-Impaired Group (LIG)	92
Language-Normal Groups	93
Materials	102
Classification of the Cognitive Uses of Language	102
The Functional Inventory of Cognitive Communication Strategies (FICCS)	103
Procedures	108
Definition of the Language Sample	108
Transcription and Representation of the Language Sample	110
Analysis of the Language Sample	111

Chapter	Page
Reliability	100
Order of Presentation of All Tests	100
Section 1	100
Section 2	100
Section 3	101
Section 4	101
Selection Measures	101
Independent Measures	101
4. ANALYSIS OF THE RESULTS	101
Group Descriptions	101
Language Used by Language-Minority and Language-Majority Children	101
Language Used by Language-Minority Children of Different Ages and Sexes	101
Correlation and Regression Analysis	101
Language Use and Standardized Measures of Language Contact and/or Form	101
Language Use and Nonstandardized Measures of Language Form	101
Language Use and Measures of Academic Achievement	101
Reliability	101
Internal Consistency	101
Inter-rater Reliability	101
Intra-rater Reliability	101
Summary of Findings	101
5. SUMMARY AND CONCLUSIONS	101

Chapter	Page
Summary	264
Discussion	269
Conclusions and Suggestions for Future Research	277

APPENDICES

A. PARENTS' SIZE AND INCOME SCALES FOR FREE MEALS AND REDUCED-PRICE MEALS	323
B. SUBJECTS' FRAMEWORK FOR THE CLASSIFICATION OF LANGUAGE USE	325
C. LANGUAGE SAMPLE ELICITATION MATERIAL, ALL TOOTH	331
D. STIMULUS MATERIAL FOR LANGUAGE SAMPLE ELICITATION	340
E. PROTOCOL FOR TRANSCRIPTION AND IDENTIFICATION OF LANGUAGE SAMPLES	348
F. RULES FOR COUNTING MORPHEMS	354
G. RULES FOR COUNTING WORDS	357
H. RAW DATA ON STANDARDIZED LINGUISTIC MEASURES AND THE OVERALL SCORE ON THE FUNCTIONAL INVENTORY OF COMMUNICATIVE STRATEGIES ACHIEVED BY ALL SUBJECTS	358
I. RAW DATA ON STANDARDIZED LINGUISTIC MEASURES OBTAINED IN RESPONSE TO THE FUNCTIONAL INVENTORY OF COMMUNICATIVE STRATEGIES ACHIEVED BY ALL SUBJECTS	364
J. RAW DATA ON MEASURES OF ACADEMIC ACHIEVEMENT FOR ALL SUBJECTS	366
BIBLIOGRAPHY	367
ACADEMIC GAZETTE	379

Dissertation Presented to the Graduate Council
of the University of Florida in Partial Fulfillment of the Requirements
for the Degree of Master of Philosophy

THE INFLUENCE OF LANGUAGE ABILITY,
SEX AND SOCIOECONOMIC STATUS
ON LANGUAGE USE

By

Ellen Jane Lieberman

August 1988

Chairman: Thomas D. Abbott

Major Department: Speech

Language is the process by which children succeed or fail in school. Because language is an important subject of instruction as well as the process by which that instruction is achieved, it is imperative that strategies of language use necessary for school success be identified and assessed.

The purpose of this study was (1) to determine the influence of language ability, sex and socioeconomic status on children's language use, and (2) to examine the relationship and predictive accuracy between measures of linguistic performance, academic achievement and language use.

Language use was evaluated with the Functional Inventory of Cognitive Communication Strategies (FICCS), a structured interview which assessed four language use categories: Reporting, Reasoning, Problem Solving and Prejudging.

The influence of language ability on language use was examined by comparing language-impaired children to two groups of language-normal children, one matched for age and one matched for classroom

length. Performance of the language-normal group matched for age was significantly higher than that of the language-impaired group. No significant differences were observed between the language-normal group matched for sentence length and the language-impaired group. The language-impaired group achieved significantly lower word-level scores than their language-normal peers but higher scores than their younger, normal counterparts matched for sentence length, suggesting that the communicative function of the impaired children was better than their linguistic skills would imply.

The influence of age and socioeconomic status on language use was evaluated using a factorial design, with two age levels (6 years and 7 years) and two social class levels (lower and higher). The language-normal 6-year-olds achieved significantly higher scores than the language-normal 7-year-olds on free/leading strategies.

Correlation analyses between performance on FLES and measures of linguistic ability indicated a strong relationship between FLES and standardized measures of language ability but not for standardized. These findings suggest that spontaneous language sampling, through its preservation of the interactive nature of communication, provides a more powerful correlate of language use than standardized standardized tests. The relationship between FLES and measures of academic achievement was modest, indicating that language use and other factors contribute to success in the classroom.

CHAPTER I

INTRODUCTION

Significance of the Problem

Communication is the process by which children succeed or fail in school. The modern classroom, more than ever before, provides a laboratory for the development and practice of communication skills whose application extends far beyond the confines of the school environment. Present-day education techniques have turned the classroom into a microcosm of the world where all aspects of human communication are used to assure. The student serves as initiator, processor and decoder of the cognitive and social content of a variety of messages.

Clearly, communication underlies the major portion of classroom learning. Not only is it an important subject of instruction, but it is also the process by which that instruction is achieved. Because communication is central to both the means and ends of education, a failure in classroom communication will have the most serious consequences. The child who does not succeed in school may be one whose use of communication in the academic setting is restricted in some way and whose communication efforts may reflect an impoverishment of vocabulary or syntactic options, or, skills which are present but which inappropriate to the variables for a given classroom situation. Any of these problems may seriously alter a child's participation in the classroom. Traditionally, those disciplines concerned with the study of child

language and learning have focused on the adverse effects of linguistic deficits on classroom participation, while the broader, and perhaps more elusive notion of communicative competence has been largely ignored. Jean Tough (1990), a British educator who has done considerable research on communication skills in early childhood, acknowledges the difference between linguistic and communicative competence. In her book, Listening to Children Talking, she distinguishes between children whose talk is almost imperceptibly phonological, syntactic and semantic patterns and children whose talk is fluid and is a restricted set of uses.

The development of evaluative measures of communication problems in children has been primarily confined to those which measure specific linguistic aspects: phonology (Fischer & Ingram, 1971; Bellugi & Brainerd, 1980; McArthur, 1980; Wajnar, 1983), syntax (Harris, 1974; Rutter, Wether & Stark, 1985; Lee, 1983), and semantics (Gather, 1979; Dunn, 1984; Greenfield & Sachs, 1980). The emphasis on the description and evaluation of language form and content in children is reflected in current assessment strategies and much of the language research literature carried out during the 1980s and early 1990s. Influenced largely by Chomsky's (1953, 1965) theory of transformational grammar and Fillmore's (1968) notions about case grammar, investigators performed linguistic analyses or designed psycholinguistically rigorous research paradigms to discover new information about the development of form (Harris, 1974; Dunn, 1973; Greenfield & Sachs, 1973; Rutter, 1981) and content (Harris, Lightfoot & Reed, 1979; Clark, 1973; Leonard, 1974; Nelson, 1971, 1980).

This early influence of psycholinguistics on the study of child language focused our attention on the languages which children use rather

then as children as language users. Descriptions of the linguistic competence of children were standard, but the broader notion of communicative competence—how children use language in socially appropriate contexts—largely overlooked. Recent research trends in the study of child language demonstrate that we are on the threshold of moving from an interest in the description of isolated linguistic features to an interest in the description of communicative function in context. The communicative approach emphasizes the importance of the ability to use language to convey a variety of intentions and meanings dependent upon the context and social setting of the communication.

This shift in perspective represents a major accomplishment in a movement toward relevance and functionality in communication measurement and management. Although psycholinguistic theory accounts for an important aspect of what the child does to know during attempts to use speech for communicative purposes, it does not account for all the knowledge which underlies communicative development. Specifically, it does not explain how the child not only comes to speak grammatically but simultaneously acquires the ability to apply linguistic knowledge in functionally appropriate and profitable ways in a variety of communication situations (Wagon, 1971).

Psycholinguistic theory, on the other hand, recognizes that the ability to speak appropriately is "part of the same developmental matrix" (Wagon, 1970, p. 16) as the ability to speak grammatically. Both these abilities are necessary conditions for the attainment of communicative competence. It is only through the attainment of linguistic competence (the rules of grammar) as well as what might be called a pragmatic aspect of competence (the rules of social

highlighted that we can account for the development of order which underlies human socialization behavior (Bogert, 1971).

Because of the recent shifts in focus to a sociolinguistic theory of language learning and language behavior, applied communication—speech, language and hearing clinicians, special educators, early childhood specialists, language arts teachers, foreign language teachers, and bilingual/bicultural consultants—have begun to develop informal strategies for the measurement and assessment of communicative competence. These strategies can be grouped into one of three types: (a) interviewing (Papell, 1974; Miller, De Lemos, Becklund, Belmont & Barlow, 1976; Ellis, 1976; Tough, 1974); (b) videotaping (Koss, 1976; Abrams & Lohr, De Winter-Fries & Mitchell-Kernan, 1977); and (c) natural language sampling (Bliss, 1974; Ross, 1977; Epstein, Schwartz, Ross, Lachin, Baker, Crawford & Phillips, 1974; Bellamy, 1975; Ross, 1975; Schneider, Grosvenor, Kips, Friedericks & Sanders, 1975; Lohr, 1975; Miller & Seltzer, 1974). Using these observational strategies, investigators have categorized children's use of language according to a variety of functional classification schemes including those of Ross (1975, 1977, 1978), Bellamy (1975), Schneider et al. (1974), Smith & John (1968), Tough (1974, 1977), and Ellis (1973).

As in the case with most research on language parameters, the majority of these investigations have gathered information on language use from middle-class, language-normal, preschool-aged children (Bliss, 1974; Ross, Grosser & Seltzer, 1976; Lohr, 1974, 1975; Ross, 1976, 1978, 1979, 1977, 1978; Ross, Schwartz & Ross, 1975; DeWinter-Fries & Mitchell-Kernan, 1977; Crawford & Selma, 1974; Bellamy, 1975). In the studies that observed the language use of linguistically

deaf-blind children and adults. These 1974 investigations involving residual roles of language also have been spelled out with the socially handicapped (Rosenbloom & Prutting, 1976; Adams, 1977; Salmer, 1977), the hearing-impaired (Carpenter, Prutting & Joseph, 1977; Marshall & Prutting, 1977), the nonverbal/visually-impaired (Johnson, Rasmussen-Baynes & Randall-Richardson, 1978; Weiss & Davis, 1977), the intellectually-disordered (Steinbock & Albert, 1974), and the specific linguistically-impaired (Jellison & McTear, 1976; Miller, 1978; Taylor, 1975). Even fewer studies have focused on the general language use of older school-aged children (Papal, 1976; Tough, 1976, 1977). While additional studies of language use in older children exist in the sociolinguistic literature, their emphases have generally been narrowly confined to limited aspects of language use such as arguments (Hornstein & Levin, 1977), narratives (Gruner, 1977) or directives (Gibson-Harris & Harris, 1977; Hardy, 1976; Erdorf-Frigo, 1981); thus, their implications, though relevant for child literature, remain fragmentary (Oost, 1976).

From sociolinguistics also comes an abundance of literature on the effects of social class and culture on language use; because of differences in design, sampling protocols, language tasks and analysis, the results of these studies present conflicting evidence relative to the influence of social class on language use. Several of the studies demonstrate that children of linguistically/cultural backgrounds use language differently (Blank, Ross & Berlin, 1978; Frick & Becker, 1976; Tomelick & Adler, 1978; Tough, 1977; Williams & Harrison, 1980a). Other studies have shown class differences in language use (Owens, 1977; Schneider et al., 1976; Wells, 1981). This period of the available literature on language use contains several avenues of investigation

which seems to be shared, particularly with regard to the older language-impaired children than in a less than advantageous social situation.

Statement of the Problem

The problem of this investigation is (a) to assess differences in language use between groups of children who differ in age, social class, and linguistic ability; and (b) to evaluate the relationship and predictive validity between measures of linguistic and academic competence and the Functional Inventory of Socialization Communication Assessment (FISCA), a researcher-developed instrument, which assesses language use or communicative competence. More specifically, answers to the following questions will be sought:

1. Is there a difference in language use between language-impaired children and language-normal children, matched on the basis of chronological age?
2. Is there a difference in language use between language-impaired children and language-normal children, matched for maximum length?
3. Is there a difference in language use between language-normal children at two different age levels, 4 years (24 to 36 months) and 7 years (72 to 84 months)?
4. Is there a difference in language use between language-normal children of two different socioeconomic levels, home and upper?
5. What is the relationship of language use as performance on standardized measures of language from earlier context?

6. What is the relationship of language use to performance on standardized measures of language level?

7. What is the relationship of language use to performance on measures of academic achievement?

Definitions

1. The study was confined to four groups of children, one language-impaired and three language-normal.

2. Subjects were selected from the prekindergarten, kindergarten and first grade population of the Wilkes and Weyer County school system in North Carolina according to the following criteria:

- They were enrolled in a school program for a period of not less than four weeks prior to inclusion in the study.
- They demonstrated average intellectual functioning (IQe Deviation Score = 85 to 110) on the Colombia Mental Maturity Scale (Burgess, 1958; What a Large, 1958).
- They were judged to be language-impaired (STTish percentile) or language-normal (T20th percentile) on the basis of performance on the Boston Language Inventory Test (Buckwalter, 1977) and a clinical opinion of a certified speech, language and hearing clinician.
- They were native speakers of English free from neurological lesions and did not exhibit any gross peripheral defects of audition or vision.

3. The total testing time was confined to four sessions, or 1½ hours for each subject.

4. Data regarding the criterion variable of language use were confined to that gathered from a researcher-developed instrument, the Functional Inventory of Descriptive Communication Strategies (FIDCS), based on Wright's (1994) functional classification scheme.

5. Data regarding the predictor variables of linguistic and academic competence were confined to three operational measures of language form and/or content, eight operational measures of language form, and four measures of academic achievement.

Limitations

1. To the extent that pretesting sensitized the subjects to the language sampling procedure, results will not be generalizable to unpretested groups.

2. To the extent that the subjects selected are not representative of the language-impaired or language-normal population at large, results will not be generalizable beyond the sample investigated.

3. To the extent that knowledge of subject status affects the objectivity of the researcher's observations and judgments, or causes her to influence the subjects' reactions to the tasks, results may be biased in favor of one group or the other.

4. To the extent that the subjects are aware of participation in a research study, results may not be generalizable beyond the experimentally accessible population.

Assumptions

The following assumptions were made in this study:

1. That the groups of language-impaired and language-normal children were matched on the major critical variables affecting language

sex, age, socioeconomic status, intellectual ability, and general linguistic level, and that other extraneous variables which may affect language use, such as motivation and personality characteristics, were randomly distributed between the language-impaired and language-normal groups.

2. That the exposure to learning variables in the school environment, such as supportive relationships with teachers, was equivalent for all groups.

3. That the researcher-developed inventory of cognitive communication strategies did, in fact, measure ability to use language in response to a structured interview, and that this ability is representative of the way in which children use language in the classroom.

4. That the researcher, being a proficient speaker, language and hearing clinician, was qualified to administer, score and interpret all testing procedures used in this study.

Hypotheses

To give direction to the data analysis, the following hypotheses were developed. These hypotheses, stated in the null form, were tested at the .05 level of significance.

Hypothesis 1

H_{1.1} There is no significant difference in performance on the PICS overall scale between the language-impaired (LI) and language-normal (LN) groups who are matched for chronological age (20).

H_{1.2} There is no significant difference in performance on the PICS Reporting subscale between the LI and LN groups.

H_{0.1.1} There is no significant difference in performance on the FICOE Logical Reasoning subscale between the LI and LRI groups.

H_{0.1.2} There is no significant difference in performance on the FICOE Reading subscale between the LI and LRI groups.

H_{0.1.3} There is no significant difference in performance on the FICOE Prejudging subscale between the LI and LRI groups.

H_{0.1.4} There is no significant difference in performance for the 14 individual communication strategies on FICOE between the LI and LRI groups.

H_{0.1.5} There is no significant difference in performance for lower-level strategies overall on FICOE between the LI and LRI groups.

H_{0.1.6} There is no significant difference in performance for lower-level Reporting strategies on FICOE between the LI and LRI groups.

H_{0.1.7} There is no significant difference in performance for lower-level Logical Reasoning strategies on FICOE between the LI and LRI groups.

H_{0.1.8} There is no significant difference in performance for lower-level Prejudging strategies on FICOE between the LI and LRI groups.

H_{0.1.9} There is no significant difference in performance for lower-level Prejudging strategies on FICOE between the LI and LRI groups.

H_{0.1.10} There is no significant difference in performance for higher-level strategies overall on FICOE between the LI and LRI groups.

H_{1.1.1} There is no significant difference in performance for higher-level Reporting strategies on FICS between the L1 and L2 groups.

H_{1.1.2} There is no significant difference in performance for higher-level Logical Reasoning strategies on FICS between the L1 and L2 groups.

H_{1.1.3} There is no significant difference in performance for higher-level Realizing strategies on FICS between the L1 and L2 groups.

H_{1.1.4} There is no significant difference in performance for higher-level Projecting strategies on FICS between the L1 and L2 groups.

Hypothesis 2

H_{2.1} There is no significant difference in performance on the FICS overall score between the language-impaired (LI) and language-normal (LN) groups who are matched for utterance length.

H_{2.1.1} There is no significant difference in performance on the Reporting subscore between the LI and LN groups.

H_{2.1.2} There is no significant difference in performance on the Logical Reasoning subscore between the LI and LN groups.

H_{2.1.3} There is no significant difference in performance on the FICS Realizing subscore between the LI and LN groups.

H₀ 2.6 There is no significant difference in performance on the Projecting subtests between the LI and L2 groups.

H₀ 2.7 There is no significant difference in performance for the 24 individual communication strategies on FICS between the LI and L2 groups.

H₀ 2.7 There is no significant difference in performance for lower-level strategies overall on FICS between the LI and L2 groups.

H₀ 2.8 There is no significant difference in performance for lower-level learning strategies on FICS between the LI and L2 groups.

H₀ 2.9 There is no significant difference in performance for lower-level lexical learning strategies on FICS between the LI and L2 groups.

H₀ 2.10 There is no significant difference in performance for lower-level Projecting strategies on FICS between the LI and L2 groups.

H₀ 2.11 There is no significant difference in performance for lower-level Projecting strategies on FICS between the LI and L2 groups.

H₀ 2.12 There is no significant difference in performance for higher-level strategies overall on FICS between the LI and L2 groups.

H₀ 2.13 There is no significant difference in performance for higher-level learning strategies on FICS between the LI and L2 groups.

H_{2.15} There is no significant difference in performance for higher-level Logical Reasoning strategies on FICS between the LI and LQI groups.

H_{2.16} There is no significant difference in performance for higher-level Predicting strategies on FICS between the LI and LQI groups.

H_{2.17} There is no significant difference in performance for higher-level Projecting strategies on FICS between the LI and LQI groups.

Hypothesis 3

H_{3.1} There is no significant difference in performance on the FICS overall score between the language-normal 6- and 7-year-olds.

H_{3.2} There is no significant difference in performance on the FICS Reporting subscore between the language-normal 6- and 7-year-olds.

H_{3.3} There is no significant difference in performance on the FICS Logical Reasoning subscore between language-normal 6- and 7-year-olds.

H_{3.4} There is no significant difference in performance on the FICS Predicting subscore between language-normal 6- and 7-year-olds.

H_{3.5} There is no significant difference in performance on the FICS Projecting subscore between language-normal 6- and 7-year-olds.

H_{3.1.4} There is no significant difference in performance for the 16 individual communication strategies on FICIS between language-normal 6- and 7-year-olds.

H_{3.1.5} There is no significant difference in performance in the lower-level strategies overall on FICIS between the language-normal 6- and 7-year-olds.

H_{3.1.6} There is no significant difference in performance on the lower-level Reporting strategies on FICIS between language-normal 6- and 7-year-olds.

H_{3.1.7} There is no significant difference in performance on the lower-level Logical Reasoning strategies on FICIS between language-normal 6- and 7-year-olds.

H_{3.1.8} There is no significant difference in performance on the lower-level Predicting strategies on FICIS between language-normal 6- and 7-year-olds.

H_{3.1.9} There is no significant difference in performance on the lower-level Projecting strategies on FICIS between language-normal 6- and 7-year-olds.

H_{3.1.10} There is no significant difference in performance on the higher-level strategies overall on FICIS between language-normal 6- and 7-year-olds.

Ho 3.13 There is no significant difference in performance on the higher-level reporting strategies on FICO3 between language-normal 4- and 7-year-olds.

Ho 3.14 There is no significant difference in performance on the higher-level logical reasoning strategies on FICO3 between language-normal 4- and 7-year-olds.

Ho 3.15 There is no significant difference in performance on the higher-level problem solving strategies on FICO3 between language-normal 4- and 7-year-olds.

Ho 3.16 There is no significant difference in performance on the higher-level sequencing strategies on FICO3 between language-normal 4- and 7-year-olds.

Results 3.5

Ho 4.1 There is no significant difference in performance on the FICO3 overall score between the lower (LH3) and higher (HH3) socioeconomic status language-normal groups.

Ho 4.2 There is no significant difference in performance on the FICO3 reporting subscore between the LH3 and HH3 language-normal groups.

Ho 4.3 There is no significant difference in performance on the FICO3 logical reasoning subscore between the LH3 and HH3 language-normal groups.

H₀ 3.4 There is no significant difference in performance on the FIDIS Reading subtests between the L2B3 and H2B3 language-normal groups.

H₀ 3.5 There is no significant difference in performance on the FIDIS Pre-writing subtests between the L2B3 and H2B3 language-normal groups.

H₀ 3.6 There is no significant difference in performance for the 19 individual communication strategies on FIDIS between the L2B3 and H2B3 language-normal groups.

H₀ 3.7 There is no significant difference in performance on the functional strategies overall on FIDIS between the L2B3 and H2B3 language-normal groups.

H₀ 3.8 There is no significant difference in performance on the lower-level Reporting strategies on FIDIS between the L2B3 and H2B3 language-normal groups.

H₀ 3.9 There is no significant difference in performance on the lower-level Logical Reasoning strategies on FIDIS between the L2B3 and H2B3 language-normal groups.

H₀ 3.10 There is no significant difference in performance on the lower-level Predicting strategies on FIDIS between the L2B3 and H2B3 language-normal groups.

H₀ 3.11 There is no significant difference in performance on the higher-level Projecting strategies on FICS between the LHS and RHS (language-normal) groups.

H₀ 3.12 There is no significant difference in performance on the higher-level Strategizing strategies on FICS between the LHS and RHS (language-normal) groups.

H₀ 3.13 There is no significant difference in performance on the higher-level Reporting strategies on FICS between the LHS and RHS (language-normal) groups.

H₀ 3.14 There is no significant difference in performance on the higher-level Logical Reasoning strategies on FICS between the LHS and RHS (language-normal) groups.

H₀ 3.15 There is no significant difference in performance on the higher-level Problem Solving strategies on FICS between the LHS and RHS (language-normal) groups.

H₀ 3.16 There is no significant difference in performance on the higher-level Projecting strategies on FICS between the LHS and RHS (language-normal) groups.

Hypothesis 3

H₀ 3.1 There is no significant relationship between performance on a measure of language use, FICS, and the Test of Reading Comprehension of Language (TRAIL).

H₀ 5.3 There is no significant relationship between performance on FICS and the Test of Language Development (TOLB).

H₀ 5.4 There is no significant relationship between performance on FICS and the Carroll Revised Language Inventory (RLI).

Hypothesis 6

H₀ 6.1 There is no significant relationship between performance as a measure of language use, FICS, and the total number of communication units (PCU's) used in response to a structured interview.

H₀ 6.2 There is no significant relationship between performance on FICS and the total number of words (TW) used in response to a structured interview.

H₀ 6.3 There is no significant relationship between performance on FICS and the mean length of utterances in words (MLU-W) used in response to a structured interview.

H₀ 6.4 There is no significant relationship between performance on FICS and the total number of morphemes (TM) used in response to a structured interview.

H₀ 6.5 There is no significant relationship between performance on FICS and the mean length of utterances in morphemes (MLU-M) used in response to a structured interview.

H₀ 6.6 There is no significant relationship between performance on FICS and the mean length of the five longest utterances (MLU-5) used in response to a structured interview.

Ho 3.2 There is no significant relationship between performance on FIDR and the percentage of complete communication units (CCU) used in response to a structured interview.

Ho 3.3 There is no significant relationship between performance on FIDR and the Developmental Assistance Score (DAS) obtained in response to a structured interview.

Propositions 2

Ho 2.1 There is no significant relationship between performance as a measure of language use, FIDR, and a measure of reading achievement, the Test of Basic Experiences language subtest (TBEL).

Ho 2.2 There is no significant relationship between performance on FIDR and the Test of Basic Experiences mathematics subtest (TBEM).

Ho 2.3 There is no significant relationship between performance on FIDR and the Test of Basic Experiences social studies subtest (TBES).

Ho 2.4 There is no significant relationship between performance on FIDR and the Test of Basic Experiences science subtest (TBES).

CHAPTER 2
REVIEW OF RELATED LITERATURE

The Interdisciplinary Nature of Modern
Research Into Language Use

There is no single corpus of research which explains the child's developing ability to use the phonological, syntactic and semantic structures of language to communicate effectively a variety of messages in diverse social situations. Several disciplines, including linguistics, sociolinguistics, developmental psychology, philosophy and speech pathology have been approaching this issue from rather but different points of view. Evidence for these "separate but nearly equal" settings comes from the many papers which have evolved to describe increasingly the state-of-the-art of behavioral communication competence (Brown, 1970; Laddin, 1971; West, 1964), pragmatic theory (Grosz, 1976a, b, 1976; Rieber & Sanders, 1978; Frawley, 1975; Ross, 1978) and language use (Wells & Leary, 1978; Ellis, 1978; Hollings, 1978). Although these areas are not precise synonyms, the cluster of behaviors referred to by such terms "has involved two main areas of child study, highlighting the importance of rule-governed ways in which children go into (and to use) the domain of communication situations" (Ellis & Brown, 1976, p. 150).

Both disciplines which have underlain the task of studying language using a contextual approach has made significant contributions concerning the language use of real speakers and listeners. From

philosophy has arisen a theory of speech acts which focuses on the communicative activity realized through language. Linguistics has developed a specialized branch of study called pragmatics with its own terminology and taxonomy of signs. The speaker's goal in using an utterance (performatives) and the rules for relating utterances to their contexts (presuppositions and inferential postulates) are the constructs treated by this discipline. The influence of social norms, rules and contextual situations on language use has been addressed by sociolinguists in their attempt to provide a fuller account of the notion of communicative competence. Developmental psychologists have put the theories of speech acts, pragmatics and communicative competence to work to determine how children learn their roles as communicators from early social interactions. In speech pathology, clinicians, drawing from theory as well as methodology, have evolved programs of evaluation and management of disorders of language use. For this review, the various issues associated with the contextualist approach will be subsumed under the more broadly inclusive expression, "language use."²

Expanding the Notion of Competence

Chomsky (1965) introduced the notion of "competence" into linguistic theory to refer to the abstract knowledge of the rules of language which enables the speaker to understand and produce an infinite set of novel sentences. This knowledge or competence about how language should sound and what it means accounts for the ideal speaker/hearer's ability to judge the grammaticality of sentences; however, it says

little about what children's everyday use of language in particular situations

Symes (1981, 1985) has been critical of the linguists' tendency to emphasize the notion of competence skills neglecting the issue of performance or use. He proposed an expansion of the notion of linguistic competence into "competence for use" or "communicative competence" -- how children perceive and categorize the social situations of their world and differentiate their ways of speaking accordingly. This broader account of the facts provides an explanation of what the language user knows about "who can say what, in what way, where and when, by what means and to whom" (p. 12). The important issue is that children's verbal behavior is a reflection of their knowledge of language use as well as of grammar and the application of that knowledge will vary according to the communication situations. This influential role of the communication situation in determining verbal behavior is an important insight that has made sociolinguistic theory useful for our understanding of language development and language behavior.

From a sociolinguistic point of view, there is more to "competence for use" than language ability. Applied communication specialists use language and linguistic competence as the vehicle and the communicative context and management programs. Sachs (1981) comments,

... there is more to using, learning and teaching a language than knowledge of the linguistic rules and forms. Knowing the grammar is just not enough as a model of how speakers behave. -- (p. 3)

Origins of the Study of Language Use

In 1938, Charles Morris incorporated the notion of language use into a tripartite organization of language. According to this model, a comprehensive description of language required a statement about three principal components:

1. Semantics—the relation of signs to one another,
2. Lexicology—the relation between signs and their referents,
3. Pragmatics—the relation between signs and their users

In the late 1940s and early 1950s, scholars in the field of the philosophy of language expanded the notion of language use to include a practical system for classification of the knowledge which underlies socially appropriate speech. The work of two linguistic philosophers in speech acts theory, J. L. Austin (1960) and J. R. Searle (1969) has served as the basis for much of the current research in the area of language use.

The Study of Language Use

In their three-dimensional characterization of language, Rymes and Lohr (1978) echo Austin's earlier writing by describing language as consisting "of two aspects of utterance, or meaning that is coded by linguistic form for some purpose or use in a particular context" (p. 11). Through the integration of content, form and use, children become competent communicators as they acquire the ability to use alternative forms of a message for achieving the same purpose, according to differences in the situational context. Earlier depictions of child language acquisition focused for the majority of context and form, but it is in the

controversial account that we use the additional context with us. The controversy arose that "there was a structure to the use of language that went beyond the aspect of structure dealt with in grammar" (Hollnagel, 1976a, p. 201).

Within the broad framework of language use, Haiman and Labov (1976) recognize two main areas, *Function* and *Context*. *Function* refers to the goals or intent of a communication, "the reasons why people speak" (Haiman & Labov, 1976, p. 73). *Context* encompasses the influence of specific sociological parameters, such as the time and place of the communication, in determining the form which the message will take. "Speakers of a language have alternative means for saying the same thing or achieving the same purpose, and which alternative is used depends on the context" (Haiman & Labov, 1976, p. 10).

Traditionally, the functions of language have been hypothesized to linguistic forms and associated with the linguistic structures for the designation, interpretation, negotiation or maintenance relations (Halliday (1975) and others have described the functions of language "in more general terms involving identification, regulation and personal control" (Haiman & Labov, 1976, p. 10). To achieve these communicative functions, speakers choose appropriate verbal and nonverbal behaviors to bring about desired effects in a wide variety of social interactions. The verbal and nonverbal choices which speakers make have been called communication strategies or communication acts by some investigators (Joshi, 1976) and evolved out of the more restricted notion of "speech acts," "perlocution" or "illocutionary force." This category of language use involves the specification of the speaker's goal in producing

an utterance—it describes intention to make a statement, not a content or focus of content.

The second aspect of language use focuses on the influential factors involved in the selection of utterance forms for conveying messages in varied social contexts as well as the communication processes by which these messages are produced. The form of an utterance changes, depending upon the ability of the speaker to adapt the message to the needs of the listener and to the immediate linguistic and non-linguistic contexts. These elements of the communication process are captured by the long standing finding in conversational theory (Sacks, 1988, p. 108): "While the rules of pragmatic theory, these constraints have been labeled presuppositions and conversational postulates. Although there is considerable controversy regarding the details of presuppositions, in general they involve "information that is not contained in the message itself but must be known and understood if the message is to make sense" (Sacks, 1988a, p. 478). Presuppositions are the determining factor by which speakers select their messages to the listener's condition; they decide what to say and what not to say. According to Sacks (1988a), the major conversational task for children in a communicative exchange is learning "when go to presuppose, when go is necessary to provide the listener with explicit cues about the information that is being assumed as background for a comment." (p. 442). This process has been referred to as thematic structure (Schiffrin, 1987) or selecting new information to add (Clark & Clark, 1977; Sacks, 1988).

Conversational postulates have been described by Sacks (1988a) as the "key social rules of conversation" (p. 442). They are a special class of pragmatic presuppositions which "attempt to make explicit the

rules speakers and listeners must observe if meaning is to be conveyed" (Sapir, 1928, p. 288). Sapir (1936) has reduced these rules to four maxims which contribute to what he calls the "temporalized principle" of communication. In summary, these maxims are: (1) to informative; (2) to truthful; (3) to relevancy; and (4) to clear.

These three constructive-performative, presuppositional and conversational postulates--"contribute to both the form and content of messages, to how people do things with words, and to the language itself" (Chomsky-Lewis, 1978, p. 17). In 1976, Bates commented on the limited extent of pragmatic research in child language. The greater proportion of this work centered on the acquisition of performance or communicative intent although, as Bates (1976) noted, "the content of conversation is probably the most complex as well as the most important target of the pragmatic approach to the study of language" (p. 144).

The present investigation focuses on the study of a single aspect of language use--the communication strategies or goals used by children of differing linguistic ability, age, and socioeconomic level.

Evolution of Language

Although philosophers, linguists and psychologists have long been interested in functional knowledge of language use, their participation has only recently gained momentum with applied disciplines. Various theories have been described, each according to the author's own unique interests. In 1937, Malinowski developed an ethnographic account of the functions of language as described the use of language in organizing fishing expeditions in the Trobriand Islands. (Sapir

that is, other functional systems have appeared with different focus, e.g., epideictic (Delapue, 1937, Baker, 1976; Smith & John, 1981), agonistic (Plagel, 1913; Warner, 1967; Fraser, 1975), literary (Labovian, 1968), ideational (Morris, 1943), Imperative (Guthrie, 1936, 1939) and relational (Grice, 1971). On the surface, the categories and terminology selected to study of these functional subfunctions indeed differ, but each incorporates a basic distinction between a cognitive (ideational, representational, referential) and a social (interpersonal, circumstantial, emotive) function of language.

The well-known accounts of the broad functions which language serves are those offered by Delapue (1937) and Fraser (1975). In 1937, Delapue wrote "man does not speak simply to release their feelings or to air their views, but to make a response to their fellows and to better upon their attitudes and acts" (p. 36). Fraser (1975) maintained that "Language is regulated as an instrument for regulating joint activity and joint attention" (p. 11).

The correspondence between these two global characterizations of communicative function is not surprising, since, as Nelson and Nelson (1981) point out, they describe the same global underlying phenomenon. Both manuals describe two broad functions of language: (a) the regulation or influencing of a listener's actions, and (b) the regulation or influencing of a listener's attention or attitudes. The first function type includes communicative acts such as requesting or demanding which require an overt response from the listener, thereby allowing the speaker to judge the success of the communicative exchange. The second function type is not as well explained. According to Nelson

and Palmer (1978), it is often difficult to infer from the content of the utterances whether the speaker's underlying purpose or intent.

These complex global conceptions of language provide an organizational framework for the development of more sophisticated classification schemes. As Haden and John (1981) observed, "a simple disambiguating of something as simple as verbal behavior is nothing more than a bold step. It surely helps 'clear the brush' (p. 314).

The majority of these functional classification schemes were developed for the description of adult communication. Petzell (1970) adapted the threefold characterization of language functions described by Hall (1934) and Jackson (1965) to determine the content of young children's holophrastic utterances. In his analysis, he noted that all three aspects of the classification scheme were present in their earliest utterances including the referential, expressive and emotive functions. The referential function, most closely associated with the cognitive or descriptive aspects of language, is manifested in its purest form by naming or labeling. According to Petzell (1970, purely referential utterances never occurred. When children appeared to be engaged in labeling, they were actually using words predictively as comments about the situations in which they found themselves (Otaguro, 1987). The expressive function is the use of verbal requests and participatory devices to reveal the speaker's feelings and attitudes about what is being said. The emotive function influences the behavior of others and is manifested by negative and imperative constructions.

Plagem (1982) was the first investigator to develop a functional classification scheme specifically for analysis of children's language.

In his book, The Language and Thought of the Child, he attempted to answer the following question: "What are the needs which a child feels to satisfy when he talks?" (p. 25). Piaget (1931) classified the talk of children into two main categories: spontaneous and regulated. Spontaneous talk is egocentric in nature because the child, while engaged in it, does not talk of a specific audience and requires a response from a listener who happens to be inside the utterance. The child "talks either for himself or for the pleasure of associating anyone who happens to be there with the activity of the moment" (p. 31). Spontaneous speech accompanies, reinforces and supplements the speaker's actions and is unidirectional in intention and the pleasurable repetition of syllables and words. Regulated talk is interspersed in nature. "It addresses the listener, considers his point of view, tries to influence him, or exchanges ideas with him" (Johnson, Farley & Hyland-Smith, 1985, p. 186). Within the regulated function, children may use language to express shared information, emotionally toned remarks, questions, answers, social phrases and dramatic imitation.

Recent additions to the child-oriented functional classification scheme include one developed for preschool educational settings by Schneider et al. (1990) and another designed by Wallinga (1991) which can be applied from the earliest stages of infancy on upwards. Schneider and her colleagues (1991) developed an instrument for coding schemes called the Function of Interpersonal Spontaneous Preschool Speech (FIS-PI) to identify developmental changes in the patterns of spontaneous speech in children, ages 2 to 5, and to determine the effects of specifically parent-oriented interventions such as rate and social distance status on these patterns. The instrument was developed

empirically based on 2,500 actual statements, from 100 preschoolers obtained during freeplay activities. Only spontaneous (initiated by the child, while not prompted or directed by adults and no direct question elicited by parent, were considered acceptable for coding.

The FSI-P consists of a comprehensive set of nine function categories which may be further subdivided into subcategory codes. According to the authors, the category codes cover activities for all spontaneous interpersonal statements including categories for personal motives (1 to 10), social motives (11 to 111) and other motives (1111 and 111). The subcategory codes designate the sub-motives for implementing the functions, including the following:

- I. Expressing-functions to express an emotion, e.g.,

"Good!", "I have fun!", "Goodie."

- II. Desire/Implementing-functions to implement a personal desire for an object, for help, for possession, for general reassurance of activities, e.g., "Can I have some?", "This is", "Keep it."

- III. Participate/Not Participating-functions to implement possession rights involving objects, territory, turns or roles (primary or rival), e.g., "This is my doll!", "I had it first!", "I want to be away."

- IV. Self-Enhancing-functions to enhance the subject's ego, with asserting and over showing one's own pride, e.g., "Look at my big block!", "We're starting!", "That's good!", "You're cheating."

- V. Self-Deflating/Involving-functions to join a subject to other by self-deflating the other's statements, activities or characteristics, e.g., "No one", "I believe in him/her, too."

III. Dialogic-functions to join either to subject with teacher actively initiating the action, e.g., "Hello?", "Are you my friend?", "Let's play blocks?", "I'm not playing with you."

III. Soliloquy-functions to initiate or maintain a solo differentiated social interaction, with one or more subjects participating in a project, discussion or game, e.g., "I'll shoot and you fall down."

VIII. Learning/teaching-functions to impart knowledge about objective world, social world, biological world or how to proceed in a task, e.g., "What does that say?", "This is a deep truck."

IX. Reporting-functions to share an observation, thought or experience with another, e.g., "I went to the clinic?", "My bus was late?", "It's raining."

In a critical review of the FID-P, Gordon (1994) commented,

This is a unique study of developmental change in what Schachar calls "self-enclosed" social speech, that is speech addressed to but not elicited by, other children and adults. The use of developmental theory, here Piaget's, as a basis for forming hypotheses about developmental changes is an often-criticized technique in research in which some category system is applied and developmental trends found in the data then discussed. The extent to which the hypothesis were confirmed is very encouraging, and Schachar's discussion of her results is clear. The FID-P, with some modifications as the author suggests, serves further use by herself and others. (p. 31)

Halliday's (1981) functional classification of language was the first system to be developed for linguistic researchers shed light on the nature of linguistic structures and to attempt to answer the question, "Why is language as it is?" (p. 34).

In 1923, Halliday offered an integrative explanation of language functions in children and adults. Through his intensive study of the language development of his son, Nigel, Halliday (1970) traced the

evolution of language functions from earliest infancy to adulthood. Based on a sociolinguistic theory, his functional approach to language emphasized the importance of language for the acquisition and socialization of the child. According to Halliday (1983), "the child learning language is at the same time learning other things through language building up a picture of the reality that is around him and inside him" (p. 1). Language functions rather than form is at the center of this educating and socializing process since it is the structural organization of language which reflects the changing functions to which language is put and not vice versa.

Halliday's (1975) analysis of the development of language functions proceeds through three phases and shows how the child's initial functional-linguistic system develops and changes into the adult system that is both similar to and different from that of the child (Olsen, 1978, p. 234). During Phase I, which covered the period from 18½ months to 19 months in Hall's life, an idiosyncratic but consistent set of vocal signals was used to express six initial functions:

1. The instrumental or the "I want" function. In this function, the child uses language to obtain objects and services to satisfy needs.
2. The regulatory or the "be as I tell you" function. This function of language is used "to get someone to do something and is different from the instrumental function in focusing on the agent rather than on the object" (Olsen, 1978, p. 234).
3. The interactional or the "you and me" function. This is language used by the child to interact with the significant others in the environment.

4. The Function of "Where I am?" Function. This is language used to represent and describe the child's experience as an individual and as language the child as a personality into the speech situation.

5. The Function of "Tell me why?" Function. This is the function of language to explain and learn about the world around which develops from the well-learned facts, the requests for names of objects, over the middle stage of questioning from which the young child gains.

6. The Function of "Let's Pretend?" Function. This is the use of language to create a make-believe environment, including naming, songs, rhymes, story-tellings and eventually language as a verbal art form.

These four functions represent what the child can mean during this earliest stage of language development, when the child's two-level language system represents such experience in terms of a content (meaning) and an expression (sound). This system differs from the three-part adult language system which contains an information level of organization including the sound encoding of a grammar and a vocabulary. The distinction of Phase I consists of vocal patterns which have neither structure nor words. Although vocalizations already may be identified, these units are not necessarily "translations" of the primary adult sound experience in the adult language. Each self-generated vocal symbol used by the child during this phase was associated with non-specific function. By the end of Phase I, utterances become more specifically as words in the adult language system even though such utterances still perform only one function. It is impossible to mean more than one thing at a time. With eight, the first four functions of the first appeared first, followed by the appearance of the other two functions.

in Phase I), the transition into the adult system begins. For Miguel, this transitional period began between 14½ and 18 months and continued until the end of his second year. During this phase, a seventh specific function emerged—the information or "I've got some thing to tell you" function. In this function, language is used as a means of communicating an experience to someone who did not share it.

The dominant characteristics of Phase II in functional generalization. Through this process, ten broad functional categories or "macro-functions" emerge. The propositional function or "language as doing" derives from the instrumental and regulatory functions of Phase I. This function is reflected in utterances which denote a response such as "here seat," "heavy seat" and "the table." The metalinguistic function or "language as learning" arises from the personal and heuristic functions, and includes utterances which require no response, "green car," "two book," and "tiny red light." The interactional function of Phase II contributes to both derivative functions.

It is interesting to note that Bowlb made the distinction between these two functions more explicitly by specifically predicting propositional utterances with a rising intonation and metalinguistic utterances with a falling tone. This grouping of Phase I functions into propositional and metalinguistic macro-functions pointed out again to play two very different roles in a language user, an observer role and an intruder role. In the observer role, language served to express the experiences of his external and internal worlds. In the intruder role, language inhibited his participation in the speech situation—the rules, attitudes, wishes and judgments. At the beginning of Phase II, all utterances were either propositional or metalinguistic. Gradually by the end of this phase, every

attainment was both pragmatic and syntactic, a significant advance toward the adult system. Nigel had learned that language may be used to both observe and interact with the environment at the same time.

Phase II was also marked by two major linguistic developments: (a) rapid growth in vocabulary and structure, and (b) the emergence of dialogue. In Phase II, the intermediate level of linguistic form, which Bellamy labels "holophrastic" begins to develop. For the first time, Nigel's language exhibited priority of standard lexical items. Initially, these items were restricted to naming or labeling only, e.g., "Cat" meant only "feline cat" (exemplar). However, as Phase II progressed, Nigel learned to use the same word to represent different functions in different grammatical contexts. The impetus for this rapid acquisition to vocabulary seemed to be motivated not by the pragmatic concern of identifying objects and services, but rather by the syntactic concern for knowing about the environment. The vocabulary is used, at first, primarily in the context of observation and recall. The pragmatic function, however, tended to contribute more to the development of language situations, the device which enables the speaker to play both observer and interact roles at the same time. Structure drives the speaker to make his feelings of want. In conjunction with the acquisition of structure, the child learns to engage in dialogue. By dialogue, Bellamy means the ability to assign and accept conversational roles in the context of a verbal interaction. For Nigel, this skill was mastered during a ten-week period around 18 months when he learned to initiate dialogue and respond to a WH-question, a command, a statement, and a response.

Phase III turns the entry into the whole linguistic system, a system which is multifunctional and multifaceted. For Hjelmsel, this phase begins around 24 months. It includes, not major components or, according to Hjelmsel, "manifestations," the ideational and the interpersonal. A third function, the typical, provides the selective framework within which the meaning of the other two components is organized. The ideational component derives from the individual, the clearest function of language. It is the functional conceptual structure with the representation of experience, "Language as a means of talking about the real world" (Hjelmsel, 1979, p. 13). The pragmatic, or interactive function of language provides the context for the development of the interpersonal component. This component of meaning is concerned with "the communication process as a form and as a channel of social action" (Gallimore, 1983, p. 38). It is "Language as a means whereby the speaker participates in the speech situation" (Hjelmsel, 1979, p. 13). The textual function implies genre, a mode of organizing meaning that relates language use to social context. For example,

... the function of discourse depends not only on structuring the parts in an appropriate way and joining them together, but on doing so in a way that relates to the context--as narration, as dialogue, or whatever generic mode is selected. (Gallimore, 1983, p. 101)

In Phase III, the notion of "Function" is no longer synonymous with "Form." The child entering Phase III has acquired well-defined uses for language. Every utterance, whatever the use, has both an ideational and interpersonal component of meaning. Furthermore, the original Figure 1 Functions and the informative function of Phase II have become the uses of language, "the generalized social contexts of language use" (Hjelmsel, 1979, p. 28).

Given theories of language function provide only the broadest outline of language use. Any of the finer distinctions of language use are not captured by such all-encompassing categorizations. A simple classification of child language using any of the functional schemes described should accurately characterize the purposes which language serves in the child's social and cognitive growth, but would not necessarily be descriptive of the functions that individual utterances may serve. It is this distinction which is often difficult to draw and maintain. Many authors reserve the term "function" to describe the small number of higher order categories just defined and offer the terms "strategy" or "use" to describe the larger number of speech or communicative acts through which the functions of language are realized. A refined description of language use would venture beyond a mere description of language functions to a classification of the many interconnected options from which speakers choose when they communicate. These options, according to Halliday (1985), represent the meaning potential of language and involve the creation and repetition selection of communicative strategies in the context of a wide variety of social contexts.

Speech Acts Theory

The philosophers J. L. Austin (1962) and John Searle (1969) have stated that speakers produce utterances because they are attempting to accomplish something with words. This explains *use* of language, not *form* or *content* probably stems from Wittgenstein's (1958) prophetic claim that the meaning of an utterance is its use. Austin (1962), in his work How to Use Words, distinguished

between the locutionary, illocutionary and perlocutionary acts which speakers perform when they use language: 'in saying something,

(i) we perform a locutionary act, which is roughly equivalent to uttering a sentence, concerned with its surface sense and reference; ... "meaning" in the traditional sense; second, we also perform illocutionary acts, such as informing, ordering, warning, etc. (Austin, 1962, p. 104); utterances which have a definite conventional force. Thirdly, we may also perform perlocutionary acts, what we bring about or achieve (e.g. saying something, such as convincing, persuading, deceiving, ... (Austin, 1962, p. 104)

Austin's (1962) conventional analysis of speech-act-based text all utterances are produced with the purpose or intent (illocution) of conveying a specific message or content (locution) to a listener upon whom they have some effect (perlocution) in modifying behaviors, thoughts or beliefs. In his original analysis of utterances, he used the term "speech-act" to refer to all three aspects of a message: locutionary, illocutionary and perlocutionary. More recently, the term has come to be reserved for only the illocutionary force of an utterance. The illocutionary speech act has been defined by Searle (1969) as "a conventional social act, recognized as such by both speaker and hearer, that takes place when a sentence is uttered, e.g., a command is issued, a child is baptized" (p. 19).

Austin (1962) was the first to note that there were some utterances in which saying something could also be regarded as doing something or performing some action with words, as in the following examples:

- Minister to convict: I now pronounce you man and wife
- Judge to prisoner: I sentence you to 10 days in the county jail...
- One inmate to the co-prisoner: I bet you that the first one will beat the Belgars.

In such instances, by saying something, the speaker performs an act. A simple is saying; a prisoner is sentenced; a hat is placed. Each of these examples contains what Austin (1962) called a "performative" verb that makes explicit the acts the speaker intended the hearer to perform. As long as these acts are executed correctly, consistently and with sincere intent by authorized persons under appropriate circumstances, then the specified acts are performed. However, should any of these conditions be violated, then the act is void. These conditions, usually referred to as "felicity" or "happiness" conditions, must be respected or the utterances spoken do not perform the acts they enable.

Austin (1962) went on to develop the first taxonomy of speech acts, though by his own admission, his classification scheme was preliminary and tentative. In this first taxonomy of speech acts, every act could be classified under one of five very general categories: *locutionary*, *illocutionary*, *comlocutionary*, *perlocutionary* and *metalinguistic*.

In 1963, J. R. Searle expanded upon and refined Austin's work according to the speech act, the important role which it now plays in the analysis of language use. To Searle (1969), the speech act is the basic unit of human communication upon which concepts and facts are mapped for the purpose of conveying an infinite number of messages. As Searle (1969) states, regarding a language as performing speech acts "... that ... are in general made possible by and performed in accordance with certain rules for the use of linguistic elements" (p. 16). These rules delimit our use of language from another so that there exists a limited number of basic things which speakers do with language.

Searle (1985) took issue with Austin's (1960) classification of illocutionary acts and offered an alternative taxonomy in its place. His main criticism centered around the fact that he could find no consistent set of principles upon which the taxonomy was constructed. This weakness, in turn, led to a great deal of overlap from one category to another and considerable heterogeneity within some of the categories. Throughout the system, there is a persistent confusion between verbs and acts and in some instances, the verbs listed are not even illocutionary verbs.

Searle's (1985) taxonomy of illocutionary acts presupposes at least twelve significant criteria for distinguishing one type of illocutionary act from another, including (a) differences in the purpose of the act; (b) differences in how the propositional content of an utterance relates to the world, and (c) differences in associated psychological states toward the propositional content associated with various types of illocutionary acts. Applying these criteria, Searle (1985) delineated five categories of speech acts, including

1. Assertives. Speakers convey propositions about what they believe to be true, including suggestions, hypotheses and assertions.
2. Directives. Speakers attempt to get listeners to do something when they utter directives such as ordering, requesting, begging or pleading.
3. Commissives. The goal of commissives is to bind the speaker to some future course of action, as in promises, vows, pledges, contracts and guarantees.
4. Expressives. To express a psychological state about something, speakers utter acts such as saying so, welcoming, congratulating

These must specify how good or bad speakers feel about a state of affairs.

5. Declarations. When speakers utter declarations, they bring about a new state of affairs. By saying "You're fired" or "I now pronounce you man and wife," speakers change employment and civil status. Declarations are a special type of illocutionary act which Austin (1962) originally referred to as "performatives".

Each of these categories serves speakers in different ways to do things with words. Representatives tell listeners how things are. Directives attempt to get listeners to do things while representatives bid the speaker to do things. Expressives reveal the speaker's feelings and attitudes and declarations bring about changes in status and conditions.

A number of investigators have adapted Austin's (1962) class-ification scheme to describe the young children and their utterances. Greenfield and Smith (1976) focused on the representatives (representatives) and expressives (expressives) which children produce at the two-word stage. Anisovich and Pankaj (1972), and Smith (1973) performed a similar analysis on children's two-word productions. Brown (in Clark & Clark, 1977) studied the ability of older children to use directives and commissives while Berkley-Glasser (1977) and Berkley-Glasser and Weinreich (1980) were concerned with the acquisition of expressives embedded in social routines.

Green (1978, 1980, 1984, 1988) was the first investigator to develop a speech act classification framework based on the utterances which children produce. While Halliday (1978) evolved an integrated theory of pragmatic development from the prelinguistic period through

the production of reduced grammatical utterances, Stern (1979, 1985, 1986, 1988) developed several classification systems which may be applied to the child's output at different linguistic stages.

Stern (1979, 1986) used a speech act framework to analyze the single word utterances of her children at approximately 15 months of age. He described early observed utterances as "primitive speech acts" (PSAs) consisting of two elements: a "radimentary referring expression" and a "pragmatic force." The "radimentary referring expression" is the single word, the semantic component of the message, while the "pragmatic force" refers to the communicative intent of the utterance and is conveyed by the prosodic pattern which accompanies production of single words. In this model of children's early utterances, a "radimentary referring expression" may be used to express several primitive forces of communicative intentions. For example, "mama" produced with falling intonation while the child points mother as the focus serves as a label and requires no response. "Mama" produced with rising intonation while the child unconsciously attempts to gain a lot of physical contact serves as a request for pickup and requires mother to perform the action. Finally, "mama" said loudly with an abrupt rising-falling intonation while mother is across the room serves to call mother to the child. By varying the interactional context of the utterance, it is possible for the child to use the same word to perform three different PSAs--labeling, requesting and calling. Stern (1979, 1986) used the segmental and suprasegmental phonetic features of the child's utterances as well as the child's extralinguistic behavior, the frequency context of the utterance and the anticipated adult response to classify

children's completed utterances into nine distinct PUA types. Each of these types is described with typical examples in Table 1.

Stern defines a PUA as "an utterance, occurring formally of a single word or a single phrase/picture, which functions to convey the child's intention before he acquires sentences" (1976, p. 146). He emphasizes that "a PUA is not merely an abbreviated adult speech act, but a qualitatively different activity that precedes only some features earlier in full speech acts" (1976, p. 14). For example, a PUA does not contain a preexisting expectation. It conveys a child's intention without containing propositional structure.¹² The components of PUAs eventually develop into the propositional and illocutionary forces of speech acts, but this occurs only after the child has acquired most of the grammatical structure of his language" (Stern, 1976, p. 14).

From 1976 to 1981, Stern revised and refined his "pragmatic-illocutionary-interactional" model to classify the structure and function of ordinary school conversation. According to the author, "the model is intended to show how grammatical forms are chosen to convey illocutionary intentions in the service of accomplishing social interaction" (Stern, Garhart & Newman, 1979, p. 331). Central to the model is a class of illocutionary acts which serve as the primary units of conversation and analysis between the grammatical forms that signal them and the interactional purposes for which they are used.

In this subsequent model, utterances are classified as conversational acts, each consisting of a propositional content, grammatical form and an illocutionary function. Thirty-five individual conversational acts have been identified through the analysis of videotaped sessions in which seven 3-year-old children engaged in a wide variety

Table 1
Dell's First Five Speech Act Types

Primitive Speech Act	Description of Examples
Labeling	Dell says "seven" while counting doll's eyes
Requesting	Dell says "later" after quarreling with her mother in a conversation with the teacher
Answering	Dell says "how much" after mother points to a picture of a dog and says "what's that?"
Requesting (action)	Dell says "ah! ah! ah!" while unsuccessfully trying to push a peg through a hole and mother responds by helping
Requesting (comment)	Dell says "look?" while picking up a book and looking at mother
Calling	Dell loudly shouts "mama" with distress, immediate while mother is across the room
Greeting	Dell says "hi" when mother enters room
Protesting	Dell says "no!" while resisting mother's attempts to put on his shoes
Protesting	Dell says "huh?" when he is not greeted; mother does not respond

With Fred Fries, J. Dell's "Indeterminacy, Speech Acts and Language Development," *Journal of Child Language*, 2, 31-40 (1975).

of spontaneous interactions at school. Over a period of four months, 3,282 child utterances were collected and coded for conversational acts. The 33 conversational acts identified accounted for 92 percent of the utterances produced by the children. To determine the conversational act which best characterized each utterance, Snow (1976, 1977) used information both internal and external to the utterance, e.g., the form and meaning of the utterance, its grammatical and prosodic characteristics, how it related new information to old, the speaker's nonlinguistic behavior and related utterances, the verbal and nonverbal behavior of the speaker's interlocutors and the relevant situational context.

The 33 individual acts may be grouped together into six general conversational classes, including: (a) Representing which selects information or actions; (b) Assertives which report facts, state rules, or convey attitudes; (c) Performatives which accomplish acts and establish acts by being said; (d) Response which supply solicited information or acknowledge requests; (e) Regulators which control the conversational sequence; and (f) Expressions which noncompositionally convey attitudes or repeat others. Three primary conversational functions are conveyed by these general classes: the transmission of content, the regulation of conversation, and the expression of attitudes. Figure 1 presents a network representation of Snow's (1980) three-level coding scheme:

Two other classification schemes which have modified a speech acts approach while a functional framework for the purpose of describing language use in children are those developed by Wells (1977) and Tappin (1976, 1977).

the *Wells* (1983) coding scheme classifies the interpersonal function, cognitive content and discourse structure of preschool children's talk (Bee, Beebeart & Beebe, 1980, p. 262). Most relevant to the present research, he listed 120 functions of communication which can be categorised under several sequence and subsequence conversational units. *Wells* (1983) described these functions as "acts" that a partner utterance performs. Like *Austin* (1961), he was concerned with the purposes that individual utterances serve. However, he went on to explain that his interest was not in the analysis of utterances in isolation but rather in the description of utterance function in the context in which it occurs. *Wells* (1979) viewed communication functions or acts as "the smallest units of verbal interaction—the building blocks from which the edifice of conversation is constructed" (p. 26).

In his system, *Wells* has identified six conversational sequence and subsequence units. Sequences indicate the dominant purpose or function of a conversation; subsequences mark the subsidiary functions of smaller units of conversation within the overall purpose of the sequence. The sequence of functions, along with exemplary "acts" are as follows:

1. Control. The regulation of the present or future behavior of one or more of the participants through acts such as naming, offering, commanding, suggesting and protesting.
2. Expressive. The expression of feelings and attitudes as an affective response to situation through acts such as welcoming, teasing, challenging, approving and disapproving.
3. Informational. The exchange of information through acts such as labeling, connecting, questioning, responding and justifying.

4. Initial. The use of conversation to establish social relationships through acts such as greeting, leave taking and ritualizing.

5. Tutorial. The use of conversation for didactic purposes through the acts of correcting, modeling and instructing.

6. Prosequial. The use of conversation to initiate or end a sequence or to resolve a breakdown in communication through acts such as calling, requesting a repetition and reformulating.

In a conversational sequence between parent and child, the parent's dominant purpose may be control—to get the child to shut the door upon entering the house. To accomplish this purpose, it may be necessary to proceed through several conversational subsequences. There may be an initiating (Prosequial) subsequence to gain the child's attention, followed by parent's declaration of purpose or motive (Expressive) before moving to the original request to which the child complies (Control) (Wells, 1973, p. 41).

In Wells' (1973) system, the same act such as requesting, responding and justifying may occur under different functions or sequence rules. This, in part, accounts for the large number of acts. More importantly, "the acts are formulated to cover a wide array of phenomena, ranging from the purely illocutionary (question) to the social (elliptical filler, answer). As a consequence,

... a generality crucial to act types may be lost ... and the acts are formulated as different functional types. Thus, the central problem with this scheme, as well as with the other nonfunctionally based speech act codes for children ... is finding principled criteria for (a) subdividing the level of illocution not identified, (b) constructing the kinds of acts to be included, and (c) defining a decision procedure for classifying utterances into acts. (Gee, Gardner & Brown, 1984, p. 124)

Tough's (1934) 4-level classification system of language use evolved as a result of a longitudinal study undertaken to account for the role of language in the situational differences of young children from disparate social environments. Borrowing from the descriptive insights of Bernstein (1921, 1922), Bruner (1944, 1945), Luria (1950), Piaget (1950) and Vygotsky (1945), Tough (1977) devised a taxonomy of language use to fulfill two major objectives: (a) to discover differences in the range of meanings that a child attaches to his environment, and (b) to determine the purposes language serves for young children. Table 2 presents an outline of Tough's (1934) functional classification scheme. Operational definitions and examples of the various communicative strategies can be found in Appendix B.

At the broadest level of classification in Tough's (1934, 1977) scheme, utterances are categorized, by use, into seven major types:

1. Self-maintaining The use of language to create an awareness of the speaker's identity and to provide the speaker's position in relation to others.

2. Manipulating The use of language to control or regulate the physical action and operations performed by oneself and others.

3. Explaining The use of language to provide information about past and present experiences.

4. Argumenting The use of language which employs rational thought and argument to interpret experiences.

5. Projecting The use of language to extend communication beyond immediate present or past experiences to events that have not occurred and which may never take place.

Table 2

Tough's Framework for the Classification
of Language Use

1. SELF-PRIMARINESS

Examples

- a. Referring to events
- b. Presenting the self and self-prime events
- c. Justifying behavior and actions
- d. Criticizing others
- e. Threatening others

2. DIRECTING

Examples

- a. Reinforcing one's actions
- b. Directing the actions of the self
- c. Directing actions of others
- d. Collaborating in action with others

3. REPORTING

Examples

- a. Labeling
- b. Referring to details
- c. Referring to incidents
- d. Referring to the sequence of events
- e. Making comparisons
- f. Accepting related aspects
- g. Extending or accepting the causal meaning
- h. Reflecting on the meaning of experiences

4. FORWARD LOGICAL REASONING

Examples

- a. Explaining a process
- b. Reinterpreting causal and dependent relationships
- c. Accepting problems and solutions
- d. Justifying judgments and actions
- e. Reflecting on events and drawing conclusions
- f. Accepting principles

Table 3 (continued)

5. PROJECTION

Microskills

- a. Anticipating/Forecasting
- b. Anticipating the details of events
- c. Anticipating a sequence of events
- d. Anticipating problems and possible solutions
- e. Anticipating and recognizing alternative sources of action
- f. Predicting the consequences of actions or events

6. PROJECTION**Macroskills**

- a. Projecting into the experiences of others
- b. Projecting into the feelings of others
- c. Projecting into the reactions of others
- d. Projecting into situations never experienced

7. IMAGINATION**Microskills**

- a. Developing an imaginary situation based on real life
 - b. Developing an imaginary situation based on fantasy
 - c. Developing an original story
-

From J. Young's Listening to Children Talk. London: Ward Lock Educational, 1976.

6. Encoding: The use of language which is an unfamiliar or unusual content.

7. Imagery: The use of language to create an environment of stimulation.

Language use is defined as "the means by which different kinds of meaning or thinking are made evident" (Tough, 1977, p. 44). In a child's development, the purpose of language is to construct and express these meanings so that "language functions in relation to the child's developing conceptualization of the world around him" (Tough, 1977, p. 44) and reflects different modes of thinking. Five of the basic uses of language defined above—reporting, reasoning, predicting, proposing, and long/long-runaway meaning—reflective of an intentional approach of awareness and could be collectively referred to as cognitive uses. The self-regulating and directing uses convey meaning of an intentional nature by indicating the kind of relationship established between speakers and listeners and can be referred to as social uses.

At the second level of classification, utterances are categorized according to a number of strategies that serve each language use. The strategies bear some resemblance to speech acts (Austin, 1942; Searle, 1945); however, in this instance, it seems more appropriate to characterize them as "strategic acts," since it is through the employment of these strategies that information can be made about the use of language characteristic of a number of modes of thinking. It is interesting to note that Tough (1977) claims to have arranged the strategies serving a particular use of language in an ascending order of cognitive complexity.

Chomsky's (1965, 1966) system seemed particularly well-suited to the present investigation since it was developed to resolve issues about the relationship of language use to cognitive systems. It is the only system which claims to have identified the communication strategies which children need to master to succeed in the classroom.

Development of Language Use in Language-Rich Contexts

The rules governing the use of language is context, from the foundation of the study of pragmatics. According to Bates (1976d),

... all of language is pragmatic to begin with. We choose our meanings for our sentences and build our meanings onto those contexts in such a way that the two are inseparable in the same way that 'figure' is definable only in terms of 'ground.' (p. 400)

Studies in the acquisition of language use begin prior to speech itself, in the first year of life. "The studies indicate that semantic emerges, developmentally and topically, from pragmatics, in much the same way that syntax has been shown to emerge from semantic knowledge" (Bates, 1976a, p. 400). Miller and Miller (1972) state, "Before the child becomes a language user, he needs to have something to say (intention) and a reason for saying it (semantic intent) as well as a way to say it (linguistic structure)" (p. 110).

Bellinger (1972), Brown and Labov (1978), and Friesling (1985) have identified a series of stages which characterize the development of language use from infancy to adulthood. At the first level of primary focus, the infant uses a limited repertoire of behaviors (crying, gazing, crying, reaching) to meet essential needs physiologic and/or affective needs, regardless of the context. During this period, from

birth to approximately 8 months, infants accomplish and experimentally learn communicative functions which they will later learn to name. The particularly (Brown, 1973; Kellarday, 1975; Feldman, 1975) Bates, Comblath and Wolfson (1975) have labeled this the *preintentional* stage of development, corresponding to one aspect of Austin's (1961) concept: the illocutionary act of speech acts. Perlocutions have an effect on the listener but they are not recognized by both speaker and listener as accomplishing/ accomplishing (Bates, 1975a). In early communications between parent and child, there is no evidence that the infants, themselves, are aware of the communicative value of their signals. Parents react to the infant's signals as if they were produced intentionally, thereby bringing about the desired effect, but the infants, themselves, are not aware of the communicational purpose of these signals. Therefore, "about early signals function as signals only for the listener" (Bates et al., 1975, p. 212).

By the second level of *communicational form*, children have learned words and gestures which they apply in different ways. At the beginning of this stage, just prior to the emergence of the infant's first words, meaning is transmitted intentionally through sound and movement. Infants are unable to use the conventions of language but they "seem to hope that their behavior can influence the behavior of others and they behave with the intention of achieving that influence" (Blount & Leary, 1978, p. 104). Bates et al. (1975) have labeled this the *intentional* stage of development, since it is during this period, from approximately 10 to 14 months, that infants intentionally use vocalizations and gestures such as showing, giving and pointing to regulate joint attention and joint actions (Gruner, 1974). These behaviors, performed in at least two of three communicative contexts,

have been termed "proto-declaratives" and "proto-imperatives" by Bates et al. (1979). Through the proto-declaratives, the infant directs the listener's attention to some object or event. The proto-imperatives serve as a means to aid the listener to obtain a desired object. These early communicative behaviors are carried out in the absence of speech and are the precursors to the development of symbolic communication.

The acquisition of conventional means of communication begins to emerge around 18 months of age in what Bates et al. (1979) have labeled the locutionary stage. At this point, infants acquire words which they substitute for the nonlinguistic performative behaviors developed during the illocutionary stage. Their communication, in this stage, is functional as well as conventional, even though the very first words which they produce seem to be an integral part of the gestures which accompany them, e.g., "bye-bye + hand wave" or "up + hands outstretched." The goals of these early communications continue to be linked to negotiating joint attention and joint actions and are classified as assertions and requests. Assertions developed to the proto-declaratives described earlier and requests developed to proto-imperatives. Clark and Clark (1979) have speculated that,

... gestures and speech acts are parallel in function: pointing gestures require acknowledgment from the listener; joint or attentional do, and reaching gestures require an action or object just as requests do. This hypothesis, given added support from the fact that children combine no age pointing and reaching gestures together with single words and some combination of words, p. 317-318.

In addition to these two principal categories of early speech acts, children at the earliest stage of development have been observed to use a few primitive expressions such as greeting someone with "ba" or expressing dismay with "ah-oh."

As the form of children's early utterances becomes more elaborate, their functional capabilities expand also. Levin (1970), Bruner (1973) and Green (1974) have stressed that children at the earliest stage are inclined to acknowledge the existence or absence of an object, to describe the location, possession or quality of an object and to demand that an object exist. Requests are of two types: requests for action and requests for information.

At the third level of ~~language~~ ^{linguistic} ~~development~~, children elaborate their use of language along two dimensions. First, as they grow in linguistic ability, they add new types of speech acts to their repertoires. According to Clark and Clark (1977), they begin with representative (assertions) and directive (requests) and then add expressive, communicative and locative, declaratives. Second, they learn that alternative linguistic forms exist for achieving the same purpose in different contextual settings. To get a cookie, it's possible to ask a question, "May I have a cookie?", to make a statement, "I want a cookie", to make a request, "Give me a cookie?", or hint in a less direct fashion, "That cookie sure smells yummy!" The present study focuses on the former dimension--the development of a set of functional options for communication in a wide variety of cognitive situations. This stage of development generally begins in the third year of life and continues into childhood.

Only a few investigators have described the older child's increasing ability to communicate a large number of intentions through language. Porges (1973) was among the first; his system was adopted and modified by McCarthy (1980) and Green (1983) in their studies of language development in children. Although there was some disparity

In the results obtained by each of these investigators, and in addition, by Ray (1934) and Smith (1935), the sampling procedure in the studies was different. Flap's (1933) subjects experienced complete freedom of movement as their communicative exchanges were recorded during free play situations with other children of similar age. Smith's (1935) data were collected under play or circumstances of an unstructured nature. The communicative interactions of her subjects with respect to their whole children were in play with one another or in the home environment with adults. In contrast, McGee (1934), Ray (1934) and Smith (1935) gathered their samples from children who were talking or looking at books or playing with toys in highly structured situations with adults.

As a result of these differences in sampling strategies, the overall ratio of spontaneous to modified speech was different for the studies. Flap (1933) and Smith (1935) observed spontaneous speech amounting from 36 to 46 percent of the time, the other investigators reported this type of speech to less than 10 percent of the utterances, with children beyond 4 years of age averaging in this case 1 to 2 percent of the time. Conversely, modified speech contributed between 46 to 64 percent of the conversations used by Flap's (1933) and Smith's (1935) subjects and between 39.5 and 56.8 percent of the speech used by the subjects in the other investigations (Davis, 1933; Ray, 1934; McGee, 1934). This wide discrepancy in the functions which language serves may be one of the first pieces of evidence to support the widely held belief in the important influence of context or situation on what is being said, how it is being said and for what purpose. Children engaged in highly structured communication with adults have little opportunity to use spontaneous language. The situation demands that

their remarks be unelaborated. On the other hand, when children are playing alone or in the presence of other children, it is not unusual to hear them talking to themselves 'or for the pleasure of conversing anyone who happens to be there at the moment' (Piaget, 1951, p. 340). Taken together, the four studies (Davis, 1953; Bay, 1954; McIntyre, 1959; Smith, 1956) demonstrated a decrease with age in the amount of egocentric speech used. This finding lends support to the claim by Piaget (1951) and Winitzky (1946) that in later life, later language or thought replaces this type of talk to self.

With regard to the present study, the observations that 'answers' occupied the most important category at all ages is of particular importance (Davis, 1957). The frequency of occurrence of this type of speech ranged from 35.5 percent at age $5\frac{1}{2}$ to 31.7 percent at age $7\frac{1}{2}$. McCarthy (1950) also found the percentage of answers to be increasingly important in her upper two groups. Answers comprised from .5 percent of the sample at $1\frac{1}{2}$ years to 33 and 28 percent, respectively, at 4 and $4\frac{1}{2}$ years. That answers play a vital role in the child's communicative system, both at school and at home, is further supported by estimates of the relative rates of parental questions to their young children. These range from 18 percent of the speech addressed to 13-month-old children (Friedlander, Jacobs, Davis & Watson, 1952) to 38 percent of the speech addressed to 13-month-old children (Davis, 1952) and 27 percent of the speech addressed to children between the ages of 2 and 3 years (Davis, 1953; Schultz & Schultz, 1954). Later (1956) he has criticized of the question-answer format in obtaining information about the language development of disadvantaged children. He has designed language which is more elaborate in both

Form and function) collected under less transparent and more familiar circumstances. Although his observations would certainly indicate that, given the right set of conditions, these children do demonstrate complex linguistic skills, it does not offer a solution to the persistent problem of their limited achievement in the most intense interaction with language: teacher and child and parent and child.

Schwartz et al. (1978) identified developmental changes in the pattern of language use in 170 preschool children, ages 2 to 3. Using the FID-P, a Fingerprint-based inventory of language use, children's spontaneous utterances of speech were analyzed. The results of this analysis revealed a pivotal shift in the development of speech functions patterns at age 3. Before this age, patterns of speech functions consisted mainly of rote utterances (e.g., such as desire, requesting, reporting on self and things, low self-satisfying and learning, imitating (repeating words), with self-addressed speech at its highest level. Schwartz (1978) and her colleagues labeled this collection of early speech functions "Primary Socially Interdependent Speech," noting that it was reflective of young children's tendency to use language egocentrically rather than sociocentrically. Functionally, these children served to insure "mutual gratification during the primary interdependent attachment between child and caretaker" (Schwartz et al., p. 13).

After age 3, the early speech patterns advanced their frequency but speech reflecting increased levels of self-other differentiation showed a marked rise. The use of egocentricizing language statements increased strongly and a number of non-addressed collaborative and joining statements called "Secondary Social Speech"

progressively tend with age. Finally, speech patterns involving mother-
toddler (asymmetrical and justified/undesired) and collaborative disagreement
which seemed to be adopted in the midst of the transition, emerged with
high frequency at age 4 or 5. These patterns were labelled "tertiary
socialized speech".²² The authors concluded that the passage from pri-
mary to tertiary patterns of speech might now "coincide" with high
fluency and grammaticalization, indicating as the emergence of a signifi-
cant degree of age differentiation around 3rd (Machacek et al., 1979,
p. 42).

Gore (1990) videotaped seven middle-class children over a period of seven months as they engaged in a wide variety of activities at their nursery school, in order to classify their communicative intentions. The children ranged in age from 34 to 39 months and produced almost 3,000 fillocutaneous acts. These acts could be classified into 31 different types grouped under six major categories. A distributional analysis of the relative proportions of use of each of the major category types revealed the following results: requests (32 percent), responses (18.8 percent), descriptions (18.2 percent), statements (13.4 percent), conversational devices (5.4 percent) and performance (10.4 percent). Another 3.5 percent of the sample were coded as uninterpretable and 3.4 percent were double coded, as the intent of the utterance was unclear. It can be seen that requests accounted for the largest proportion of the children's fillocutaneous acts, with requests for action (19.8 percent) and requests for information (2.4 percent) comprising their request types. Descriptions constituted the second largest category of fillocutaneous acts, with major contributions to the overall proportion made by identification (11.9 percent)

and descriptions of events (9.6 percent). The third largest category of acts was statements with internal remarks about feelings and attitudes (2.7 percent) contributing most to the overall frequency of occurrence.

Poppe (1980) interviewed 38 children between the ages of five and fifteen to study developmental patterns of functional communication. His interview technique paired verbal prompts with pictorial stimuli to elicit speech acts reflective of language use for two different functions, controlling and feeling (Gallo, 1973). Twelve pictures from were designed to represent a wide variety of "real life" communication situations. In one case, for example, children had to pretend that they were a teacher trying to explain why a student could not have a book to read. The situations provided information about three important factors in any communicative exchange: 1) the function of the communication (controlling or feeling); 2) the significant other in the situation (mother, teacher or peer), and 3) the perspective taken within the situation (commenting on behalf of oneself or someone else).

Three general findings emerged from the analysis of the speech act data. First, there was a significant age effect represented mainly by a change in the communication behavior of the fifth grade children. Second, there was a significant effect involving context which indicated that the primary factor upon which children differentiated between communication situations was the function of the communication employed and not the participants involved. Third, there was a significant interaction between context and perspective which Poppe (1980) interpreted to mean that perceptions of communication differences between the self and other are dependent upon the context in which one finds oneself.

Further analysis of the results revealed that the shift in communication behavior at the first grade level was accounted for by increased diversity in speech act usage and increased use of persuasive contextual comments--statements about the communication situation--rather than consistently reflection of actual dialogues. These comments are the vehicle for dialogues by amplifying aspects of the situation to the interlocutor in order to enhance understanding. With regard to this behavior, Fogel (1981) hypothesized "that older children are more likely to present rules about situations than to present actual behaviors that may occur" (p. 304).

Three speech act types accounted for the developmental trends observed in this study including direct requests, cajoling and contextual acts. The use of direct requests for permission to do something or to go somewhere declined from the first and third grade levels (34 percent) to the sixth grade (4 percent). According to Fogel (1979), "this decline supports previous indications in the literature that younger children are more likely to employ 'hard-act' communication strategies when attempting to persuade others" (p. 229-230). Similarly, the speech act type of cajoling, i.e., pleading to change the mind of someone about a decision, decreased in total usage from the first and third grade levels (22 percent) to the sixth grade level (5 percent), and occurred more frequently in communication situations involving the mother. Finally, contextual type acts were used very infrequently by first (2.3 percent), second (5.38 percent) and sixth (11.13 percent) grade children, but peaked in use by third (22.51 percent) and fifth (28.89 percent) grade children.

Fagot (1976) also observed children in the earlier grades using a wider variety of speech acts when communicating from another's perspective than when communicating from their own perspectives. This effect was most pronounced when children took the role of teacher and least pronounced from the mother's perspective. In addition, feeling situations showed this effect more strongly than controlling situations. In other words, children are the best at having a more diverse repertoire of responses than the self, particularly with regard to feeling situations. Fagot (1976) hypothesized that this greater discrepancy between self and other in the feeling situations might be due to the relative unfamiliarity of these situations for the young child. He concluded that younger children attributed to others a greater variety of speech act capability than they attributed to themselves, which demonstrated that they have difficulty reflecting on themselves as communicators in a variety of situations, particularly those which are unfamiliar.

Several investigators have studied older children's use of specific types of speech acts such as directives (Brown-Elgee, 1977; Garvey, 1979; Green, 1979; Kitchell-Kernan, 1977), commissions (Orban, 1979) and expressions (Orban-Kissman & Macgregor, 1974). Green (1979) had children of 5 and 7 years roleplay situations with Felix, a large toy cat, in order to see how they complied with four directives and a commission. Both the 5- and 7-year-old children performed consistently well when asking Felix for something, ordering him to do something and forbidding him to do something, but the 5-year-olds had some difficulty formulating acceptable responses for persuading Felix to do something. These results showed that 5-year-old children had not yet acquired a

complex operations of directions. The conclusive practical problem for both the 3- and 4-year-olds, with 87 and 86 percent of their requests achieving acceptable standards. Clark and Clark (1977) suggested 'that children find it much easier to work out the conditions under which the listener is expected to do something than the conditions under which the speaker is' (p. 383). These findings support Ginzburg's (1980) computer-based studies of directions and commissives which showed that children understood the directive, tell, long before they understood the commissive, promise. Under 3 years of age, children interpreted the verb 'promise' as if it were a directive.

Garvey (1980), Ervin-Tripp (1972), and Rhoads-Lerman and Lerman (1977) observed the use of directives in young children. Children's ability to comply and respond to requests for action based on spontaneous dyadic interactions of younger children (3;2-4;4 years) and older children (4;7-5;7 years) were explored by Garvey (1980). Both younger and older dyads were observed to produce equal numbers of successful direct requests (e.g., 'Open the door!'). Fewer indirect requests (e.g., 'Can you open the door?') appeared in the data, with the older dyads achieving, on the average, twice as many successful attempts as the younger dyads. Among the direct requests produced, no examples of requests with performative verbs were noted (e.g., 'I order you to open the door!'). Garvey (1980) concluded that for children in the age range studied,

- (1) . . . the requests for action consist of a set of naming features which are relatively specific, which may be expressed in various forms, and which are available to the child in either the discourse role of requester or of recipient of the request. (p. 40)

Dwyer-Frigo (1977) traced the evolution of children's directives from their earliest expressions prior to 3 years of age. At this age, children produced directives with combinations of gestures, names of desired objects and some limited frequently markers like "more" and "want." By 3 years, they were capable of using embeddings and structural modifications to produce a number of alternative directive forms such as "Can I have my big boy glass?" and by 4, they employed verbal strategies requiring several steps as well as hints or negotiated interactions, e.g., "My knee's had candy in a long time." The hardest forms for children to master were those that did not explicitly identify what was wanted-negative directives of an indirect type and affirmative hints, e.g., "It's hot in here." Dwyer-Frigo (1977) concluded that "wide use of tactful directness is a late accomplishment" (p. 140).

In a study of older children from 7 to 10 years of age, Mitchell-Kernan and Kernan (1977) examined the use of directives by a group of black children as they occurred in conversation with one another and with adults. Using Dwyer-Frigo's (1977) classification scheme of directive variants, the authors found that these children had mastered all of the forms appropriate for directives and showed no decrease if at least some of the social factors which help to determine the situational appropriateness of the use of one form over another. The types of directives included: (a) need statements, e.g., "I don't want no more fighting out of the girls", (b) imperatives, e.g., "Get my brother closer", (c) intended imperatives, e.g., "Come, would you please tell that lady to quit?", (d) permission directives, e.g., "Can I speak to her?", (e) negative directives, e.g., "Hey, you

got a quarter, Reddy and I'll have, e.g., "Last person talk to me like that is in his grave."

Although a few early expressions appear in the language of 2- and 3-year-old children, their use, in general, is not mastered or fully comprehended until much later in the child's development. This aspect of language is one that parents teach by rote in the appropriate social contexts by insisting that children say "please," "thank you," "you're welcome," "I'm sorry." The use of expressions places no obligation on either speaker or listener, rather they express the feeling expected within a particular society for a particular situation. The same expressions are often hard to explain or justify to small children, and parents don't usually try (Clark & Clark, 1977, p. 380).

As the literature demonstrated, knowledge about the numerous communicative functions which older children successfully employ is fragmentary. Several investigators have used more comprehensive classification schemes to collect the broadest data base possible while others have focused on singular examples of specific speech act types. In the majority of investigations, samples have been small with considerable overlap from age to age, non-representative, some developmental trends are beginning to emerge.

Development of Language Use in Language-Impaired Children

Primary Stage

During the first nine months of life, normal infants use their voices and their bodies to attract attention, express emotion and to engage in social exchanges with familiar adults. Children at high risk

for later language impairment do not demonstrate the same facility with the extended communication system. Friesen et al (1984) observed abnormal crying patterns in brain-damaged infants during the first week of life. In interviews with mothers of autistic children, Schaffer (1970) recorded almost a complete absence of crying in the early months of life. Mothers consistently revealed that their autistic infants never cried for attention nor when they were hungry and their responsiveness to pain and discomfort was impaired.

Wills (1970) investigated the way in which autistic children and retarded children expressed emotional meaning in four situations: (a) requesting, (b) frustration, (c) greeting, and (d) pleasant surprise. The parents of the autistic children were asked to listen to the recordings of their own child, two other autistic children and one retarded child and identify the meaning of the responses recorded. Although the parents accurately identified the sounds made by the retarded child, who they said sounded "normal," they could not identify the sounds made by the other four autistic children. Wills (1970) concluded that autistic children were capable of expressing the four emotions but they did so in a personal idiosyncratic way dissimilar from that of normal children. Maratsos stated further, vocal intonation usually differs in response to the situations, autistic children's sounds were articulated.

Kinetic differences in the nonverbal communication system of children at high risk for language impairment have also been noted. Lesh et al (1977) interviewed mothers of retarded children, 16 percent of whom reported delayed calling responses in their infants. One mother said that a common phenomenon observed in mothers of autistic

children—a characteristic which interrupts substantially normal mother-child interactions (Gibson, 1971). Auditory responses, hand movements and body postures also were shown to involve in these children. Ains and May (1975) noted that autistic children pass through a transient demonstration phase (e.g., pushing mother's hand to the lightswitch to get her to turn on the light) on the slow and imperfect path toward acquisition of symbolic pointing. In fact, though 50 percent of autistic children reach state III state IIIB, they do not use gestures as a substitute for speech.

Conventional Form

In the stage of conventional form, normal children use words and gestures in a variety of ways to communicate a message. Taylor (1975) studied the pragmatic performance of 16 language-normal and 16 language-impaired children at the second stage of development. The children were matched for socioeconomic level and utterance length and were screened for cognitive development. The language-normal subjects had a mean age of 14.3 months, while the language-impaired subjects had a mean age of 15.3 months. Three experimental measures were developed to elicit presuppositional, declarative performative and imperative performative responses.

The analysis of the data revealed that the older language-impaired children, while at the same stage of development in terms of utterance length and lexicon, were deficient in their use of language. On the presuppositional measures, the language-impaired children could encode the most informative element in a context almost as often as they encoded a more informative one. In both the declarative and

imperative performative utterances, the language-impaired children performed more poorly than the language-normal children, and the language-impaired children generated significantly fewer verbal and nonverbal performatives in response to both types of measures, with somewhat responses predominating over verbal ones. Soper (1979) offered her findings as support for 'a specific representational deficit in the language-disabled child which affects the dynamic aspects of symbolization' (p. 167).

Soper's (1979) study bridges the transition between conversational and conventional language use. With regard to the use of conventional forms, she found that language-impaired children used nonverbal performatives, both declarative and imperative, more often than verbal performatives. These children preferred grasping, reaching, pulling, etc., in linguistic symbols to get the mother's attention and they substituted looking, looking and reaching, looking and passing, etc., for words to get the mother to perform a desired action. Even though the number of nonverbal imperatives was significantly greater for the language-impaired children than the normal children, the level of these nonverbal imperatives was significantly lower. In the use of conventional forms, the language-impaired children had difficulty generating verbal performatives. In fact, the differences between the performatives generated by the two groups approached the greatest significance when the performatives compared were linguistic.

Geller and Miller (1980) investigated language use in a group of three older language-impaired children, ages 3.11 to 3 years, who were functioning at a mean length of utterance level from 1.1 to 1.4. The mothers videotaped the children during interaction in a typical

produced writing and analysed their communication skills in a variety of ways. The most significant analysis for the purposes of the present study was a classification of the types of communication impairment conveyed by the children's verbal acts. When the results of this study were compared to those of Dale (1971), collected for 3-year-olds in a similar communicative context, it appeared that the language-impaired children were deficient in language structure as well as language use.

The findings of Bayler (1970) and later investigators (1974) suggest that some language-impaired children may be more deficient in the use of language for communication than even their limited mastery of vocabulary and syntactic structures would allow" (Dale, 1976, p. 752). Other studies do not share this observation about the language use of language-impaired children.

Quinn (1974) devised a modification of Dale's (1974) primitive speech act taxonomy to evaluate the language use of hearing children, 4½ with Down's syndrome and six nonimpaired. Three of the children in each group were performing at Dale's stage I (QUR = 1-2 to 2-6) and three at Dale's stage II (QUR = 3-5 to 5-10) with regard to pragmatic competence. Audio and video recordings were made of the children in a freeplay situation with their mothers in the home in order to obtain 100 intelligible child utterances for analysis. A comparison of speech act distribution among the four groups revealed essentially the same patterns. Only two speech acts, declaration and protest, achieved significant group differences.

Two studies have investigated the young hearing impaired child's ability to communicate, either verbally or nonverbally, a variety of properties (variables: Martin, Freedson & Green, 1979; Skarlick &

Prutting, 1977). Communicative intentions were videotaped during four different situations—freeplay, imitation, group lesson and individual lesson—and were analyzed using a modification of Ayres's (1974, 1975) taxonomy to include gestural intentions. Although Scazaki and Prutting (1975) found all communicative intentions expressed by all subjects, with requests/demands, descriptions, attention and responses occurring most frequently for all children, the realization of these intentions was carried out primarily through nonverbal means. These nonverbal behaviors are similar to those used by younger normal-hearing subjects and have been found to be precursors to later linguistic development. The authors concluded that hearing-impaired children expressed the same communicative intentions as normal-hearing children and demonstrated that they had acquired the basic foundation on which later language develops.

Carstens et al. (1975) investigated a larger sample of hearing-impaired children who spanned a wider range in age, 21 to 60 months. They found that, overall, hearing-impaired children coded a variety of communicative intentions using both verbal and nonverbal means. All age groups exhibited all communicative intentions, but the distribution of specific category types varied with age. It was noteworthy to note that the number of communicative intentions expressed increased with age, but the mean length of utterance remained the same. This finding seems to indicate that prelinguistic development provides development in the other components of language and provides the foundation upon which these later linguistic skills are constructed.

Only a few investigations of the communicative intentions expressed by language-impaired children have been undertaken. The

Findings have been consistent over a wide range of ages and developmental levels, indicating how insufficient is determining the true nature of language use in these children. The results of ages of the studies are suggestive of a delay in language use among the language-impaired. The same pattern of language use has been observed in their nonverbal friends but they occur less frequently and at a later age. Other studies are more indicative of disordered language use. Rapin (1970), for example, found differences in language use among her subjects who had been matched for general linguistic level.

Language Use in the Culturally Deprived

A child entering school is well on the way to mastering the essential vocal symbols and the complex grammatical system of English. The typical first grade child already knows the language of home, neighborhood and country. The child is already generating sentences effortlessly and spontaneously through unconscious use of grammatical 'rules' learned from language as acquired and developed, but does not yet have skillful control of language use in a wide variety of everyday interactions (Barnes, 1974)

Children acquiring language can only acquire that language to which they have been exposed. The child learning language must acquire the rules of pronunciation, grammar and usage. The rules of usage vary from culture to culture, but they will be learned in the immediate family during the preschool and elementary years (Brown, 1973; Rapin & Barones, 1970). Even though children from different backgrounds may have access to the same set of language forms, they will employ these forms differently in communication situations. In other

words, different groups of children might be said to show differences in language use--that is, in their knowledge of the rules for what is appropriate communication in a given situation. Language use is derived from one's communication experience, and this experience is, of course, shaped by the environment (Bernson, 1978, p. 211).

For the majority of children, family communication patterns coincide with those of larger units of society, so what the child learns at home is reinforced by contacts outside the home, especially at school.

For other children, communication roles and norms and various aspects of their code learned in the family settings are different from those of the larger culture. These latter children are likely to encounter communication difficulties in school. (Green, Loney, Roper & Bernson, 1978, p. 133)

Although it is apparent that the home environment in which a child is reared is relevant to emerging speech, language and communication skills, it has been difficult to find a valid system that allows for rigorous identification of discrete home subfactors in order to systematically evaluate their influence on communication development (Diller, 1970). The majority of studies in this area have merely related socioeconomic status (SES) to language and communication development.

In 1964, Cassen reviewed a dataset of studies that had, over the years, studied everything from vocabulary size to transformations and concluded that "in all instances, in all studies, children of upper socioeconomic status, however defined, are more advanced than the lower socioeconomic children" (p. 18). The literature on language use is not as clearcut. Whereas some investigators still attribute the commonly ascribed advantage to children from higher socioeconomic levels, others do not. Children from lower socioeconomic levels are capable of using

language for the same purpose as children from higher socioeconomic levels, but they do so less frequently, in part because they still have not met the communicative demands associated with the situation.

McCarthy (1982) analyzed the language use of preschool children as it occurred in samples of nursing conversation using a modified version of Piaget's (1951) functional classification scheme. She found that adopted information and questions occurred with greater frequency at all ages among children of higher socioeconomic levels. These differences in language use persisted even when mental age was held constant.

Berk (1987) also used the Piaget-McCarthy functional classification framework to analyze the language use of older children, ages 3½ to 5½. Overall, the children from the higher socioeconomic levels made more spontaneous remarks than the children from the lower socioeconomic levels, but the discrepancy decreased with age. In addition, the higher socioeconomic status children asked more questions than the lower socioeconomic status children, with the difference disappearing by 5½ years. This finding was compatible to that observed in the younger children studied by McCarthy (1982). Two other trends emerged from the data on social class differences. First, the naming category appeared to be used with greater frequency by the children from the lower socioeconomic levels. Second, the percentage of answers was higher for the lower socioeconomic groups although the differences decreased with age. Berk (1987) attributed these results to differences in the age situation (problems associated with the two stages of reading).

Wassenaar et al. (1994) also provided data on the qualitative differences in everyday speech acts as they occurred naturally in the preschool setting for advantaged and disadvantaged black and white children. The results reflected significant sociolinguistic differences for only two scores, modulation and asserting desires to adults. Both advantaged groups (black and white) scored higher modulation scores than both disadvantaged black groups (higher and lower IQ). The authors suggested that this finding was consistent with Beebe's (1983) research formulated in the framework of Bernstein's (1966, 1969) sociolinguistic theory.

Now CBRI found that lower-class black children were more apt to use imperative-assertive control strategies with their children, while middle-class black and white children were more cognitive-rational and personal-subjective control strategies. Imperative-assertive strategies involved orders, accompanied by appeals to existing norms, e.g., "Be it because I told you to do it." Cognitive-rational strategies involved appeals to reason, e.g., "Be it because it may fall," and personal-subjective strategies involved appeals to reasons of an emotional nature, e.g., "Be it so you won't hurt her feelings." The latter two strategies seem to require much greater use of rationalization, justification, etc. The present data suggest that the racial class differences in the use of verbal modulation are evident as early as the preschool years.

In asserting desires to adults, both advantaged groups scored consistently higher than the lower-IQ disadvantaged blacks but showed no significant difference relative to the higher-IQ disadvantaged group. These results appeared consistent with Meece's (1992) findings on the

competence of young children. His less competent preschool children showed less instrumental dependence on adults in their overall social behavior just as the disadvantaged children with lower IQs showed less instrumental dependence in their verbal speech. These data suggest that the preschool children who are least likely to turn to adults for help in fulfilling their desires are most vulnerable to school problems.

In a longitudinal study of language function, Torgi (1973) compared the language used by advantaged and disadvantaged children at the ages of 3, 5½ and 7½. Analysis of linguistic form revealed that the 3-year-old children in the advantaged group were producing longer and more complex utterances with greater frequency on all features measured than their disadvantaged peers. These differences were demonstrated at a high level of significance and supported other research findings in showing that there are differences in the language forms used by children from lower and higher socioeconomic groups. Torgi's (1973) data indicated that these differences are already apparent in the language of children by the age of 3 and are maintained in their language at 5½ and 7 years. One of the most significant findings of the linguistic analysis was "that the disadvantaged children had greater resources of language than their typical performance revealed" (Torgi, 1973, p. 143). Although the mean scores for the disadvantaged children tended to be lower on all measures, the range of scores was not necessarily similarly restricted. All disadvantaged children produced long utterances, elaborated noun and verb phrases and a greater number of noun than phrases in certain communication contexts. The generally lower scores produced by the disadvantaged children could not be explained by a failure to develop and use complex language, but rather by a

difference in general orientation to language use which also was reflected in language form. The disadvantaged children lacked the appropriate expectations for social communication situations and that were not readily disposed "to search for or recognize information that they held as appropriate for answering the questions put to them" (Tough, 1973, p. 1615).

A functional analysis of the language used by advantaged and disadvantaged children showed that by the age of 3, differences existed in the kinds of meaning that they were imposing on their experiences through language, although there was little difference in total amount of language. The disadvantaged children tended to limit language use to monitoring the ongoing situation and to referencing states in relation to others. The advantaged children used language more frequently to: (a) recall and give detail to past experiences, (b) discuss about past and present experiences, (c) anticipate future events and predict outcomes, (d) survey alternative courses of action, (e) project into the feelings and experiences of others, and (f) create imagined states through language.

These differences, first apparent in the unstructured conversation between 3-year-olds, remained unchanged in the task of 5½- and 7½-year-olds in response to structured interviews. In all situations, the disadvantaged groups used language reflective of less complex levels of thinking than that of their advantaged peers. Through their use of language, the disadvantaged groups demonstrated that they were less aware of alternative interpretations of situations and were less inclined to project beyond the immediate requirements of a task. Tough (1973) concluded that in all probability, the limited responses of the

disadvantaged children originated from attitudes which prevented them from recognizing as appropriate or relevant their extended thinking or expression of answers. She offered as evidence for her conclusion the fact that frequently when asked for additional information, the disadvantaged group gave more complete responses which reached the levels of responses produced spontaneously by the advantaged group. This finding seems to support Bernstein's (1970) observations on the relationship of early social experiences and language use. He noted how different social contexts, which provide the early experiences through which children develop language, result in different orientations toward social relationships and the use of language.

This difference in orientation toward language use has been observed in infants as young as 18 months. How (in Bruner, 1974) has found that middle-class mothers serve as instructional aids toward their infants, both by responding more to their infants' efforts to supply by speaking in return and by attempting more often to initiate exchanges. The working-class mothers in her study were more often *laissez-faire* in their approach.

In a partial replication of Tough's (1977) approach, Wells (1980) could find no clear-cut relationship between language use and other social class or educational measures after one year of schooling. Wells (1980) attributed the discrepancies between the results to

- (a) the distortion introduced into Tough's study by the comparison of selected middle-class groups, and (b) the non-interactive conception of communication that underlies her analysis of language use (p. 2).

In Wells' (1980) study, children represented four classes of family backgrounds which spanned the full spectrum of social class. When the

Full spectrum of family background was considered, differences in language use were for less educated and there were five simple linear trends over the four social classes. In fact, in some categories of language use, the trend was in the opposite direction from that predicted by Tough. Combined scores on two tests of reading at the end of the first year of school were used to determine the nature of the relationship between language use, family background and a measure of reading achievement. Significant correlations were found between language use and reading, language use and social class, or reading and social class. When the contribution of social class to the correlation between language use and reading was partialled out, the correlation was reduced to .39, which is not significant. On the other hand, even when the effect of language use was partialled out, the correlation between social class and reading was .47, which is still significant ($p < .05$). These results suggest that

... while there is a significant relationship between social class and both language use and subsequent success (as measured by reading achievement after one year) it is not the differential use of language for the purposes identified by Tough that is the main mediator between home background and school success (p. 17).

Two studies of a more experimental nature were undertaken by Edwards (1971) and Brock and Parker (1974) to examine the influence of social class on language use. Edwards (1971) investigated the effect of context on the linguistic form and function of ten advantaged and ten disadvantaged 11-year-old children. In interactive language use, no-restrictive communication which could be classified as narrative or explanation and the resulting language samples were analysed using linguistic indices of form and function. On observational measures of language form,

no significant group differences emerged. There were significant differences on measures directly related to language function or the "planning principles" underlying Bernsola's (1982, 1984) restricted and elaborated codes, e.g., range of adjectival modification and explicitness of propositional reference.

In Bernsola's (1982, 1984) early code definitions, a low proportion of anaphoric references and a high ratio of adjectives to nouns were both reflective of elaborated speech and contributed to explicit propositional communication. In the present investigation, disadvantaged children used a narrower range of adjectives and extended modifications and had a higher proportion of anaphoric references, suggesting the use of an informal, personalized code of communication.

Task differences were significant for several of the measures in response to the narrative and explanatory modes of communication. In explanations, children used more elaboration than in narratives. In addition, explanations elicited a lower proportion of simple nouns, a higher proportion of verbs, and a restricted ratio of nouns to verbs, indicative of more abstract communication. A higher ratio of nouns to processes was also observed during explanations and could be attributed to the restriction of reference in this part of the interview.

In the present study, disadvantaged children did not exhibit the rigidity in speech suggested by some previous research. The new generalizations arising out of the data were that task differences accounted for greater and more frequent differences than social class differences and that the variation in words did not suggest a particular deviation to either the restricted or elaborated code. These

results offer some support for Gordon's (1970) plea to consider the important influence of contextual factors on communication.

Bruck and Baker (1974) investigated social class differences in the acquisition of school language by twenty middle- and twenty lower-class kindergarten children. A pretest-posttest design was employed to measure changes in their grammatical and communicative skills during the first year of formal schooling, including: initiation of syntactic structures, grammatical comprehension, production of utterances, grammatical sentence completion, story-telling, description of abstract designs, vocabulary naming and vocabulary classification. These tasks were analysed according to 16 linguistic and communication variables and the data were submitted to a factor analysis.

The results of the factor analysis suggested that "communication and grammatical abilities represent statistically independent skills in kindergarten children" (Bruck & Baker, 1974, p. 218). Two factors emerged which contributed to grammatical abilities: comprehension of classroom English and production knowledge of classroom grammar. Four factors emerged which contributed to communication abilities and correlated with Hyman's (1971) definition of communication competence: (1) speech output (knowing when to speak), communication of relevant content (knowing what to say), intelligent and elaborated speech, and appropriate information (knowing how to say it).

Lower-class children did not perform consistently more poorly than middle-class children on all measures, but they did experience difficulty in three main areas:

First, lower-class children have the same ability as middle-class children in comprehending grammatical structures, but have more difficulty producing than Indeed, the

lower-class children's speech contained fewer explicit features than the middle-class children's although it contained as many explicit features . . . Third, lower-class children have particular difficulty evaluating the communicative demands of the classroom (Bruck & Tucker, 1974, pp. 216-217)

Bruck and Tucker (1974) concluded that,

Failure to give the expected information or demand may contribute initially to the lower-class child's failure to submit . . . The child knows the relevant information but does not communicate it. This may occur because he views the classroom situation as threatening and says nothing . . . or because he assumes that the teacher already knows the answer and it would be redundant for him to tell her what she already knows (p. 217)

Two general conclusions can be drawn about changes in language abilities during the first year of school. Improvement in grammatical abilities was greater than improvement in communication abilities. Of particular importance, the lower-class children improved more rapidly over the year than the middle-class children. This general improvement was not found for the communication abilities. The lower-class children "did not seem to be catching up with their middle-class peers on tests of communication abilities to the same extent that they did on tests of grammatical abilities" (Bruck & Tucker, 1974, p. 218). Any gains in communication effectiveness appeared to be related to increased use of features which stress elaboration and explicitness and not to decreased use of ambiguous or egocentric features. In summary, Bruck and Tucker (1974) emphasized that "children need specific help in learning how to use speech more effectively in the classroom. They must learn what the communicative demands of the situation are and how to meet these demands" (Bruck & Tucker, 1974, p. 218).

While developmental studies of language use in language-impaired and language-impaired speakers, most investigations of the cultural

studies focus on the school-aged child and the integrity of his habitual mode of language use for purposes of the classroom. The results of these early investigations were not conclusive.

Measurement of Language Use

A review of existing measures of language use in children reveals only one standardized tool and a variety of nonstandardized approaches which are employed to evaluate isolated aspects of this broad area. One critical problem in the development of measurement strategies of language use has been the emphasis of what Greenfield (in Carlson, Bond, Epstein, Arns & Livingston, 1977) calls "ecological validity." Greenfield argues that "much of contemporary developmental psychology is the science of the strange behavior of children in strange situations with strange adults for the briefest possible periods of time" (p. 14). Developers of oral language testing strategies, in particular, have been guilty of violations of ecological validity.

Ideally, a comprehensive assessment of language use should be designed in accordance with anthropologic theory to sample, in an ecologically valid way, the function and context of communicative situations. To a great extent, then, the development of ecologically valid communication testing situations for children depends upon the virtual simulation of real life encounters which recreate the motivational and interpersonal richness of familiar academic and social communication events.

Experimental Assessment Instruments

At the present time, there is no comprehensive battery which measures the language use of children in everyday contexts and social situations. The Pragmatic Language Assessment Instrument (PLAI) (Hark, Rose & Martin, 1998) is the only available test which attempts to measure functional aspects of natural language not encountered for in traditional language evaluations. Designed to evaluate young children's skills in coping with the language demands of the teaching situation, the PLAI is based on Wofford's (1988) model of classroom discourse which includes three major components: the speaker/hearer dyad, the topic, and the level of discourse. The level of discourse places demands on the child that require varying levels of abstraction ordered along a continuum of perceptual-language demands. The continuum has been divided into five main levels including: [a] matching perception (e.g., "What is this called?"); [b] selective analysis of perception (e.g., "What is this part for?"); [c] monitoring perception (e.g., "Look at these. How are they the same?"); [d] requesting about perception (e.g., "If the lady wants to carry all these things into the next room at the same time, tell me what she could use."); The main problem with the PLAI is the category system in which it is based. The design aspect of this tool seems to have been largely influenced by a desire to distinguish levels of cognitive ability rather than by strict adherence to any particular theory of language or communication development. As such, the instrument distinguishes between cognitive demands that require children to apply language to collect perceptions as a low level of abstraction, and demands that require children to restructure

these perceptions at a higher level of abstraction. This focus on recognition rather than communication forces the inclusion of certain items in the battery that are clearly out of an interactive nature, e.g., encoding pictures, following directions and sentence completion.

Standardized Assessment Strategies

The remainder of the strategies to be reviewed are all research-oriented measurement techniques designed to answer specific experimental questions about the nature of communication development. These strategies can be grouped into one of three types: listening, vocabulary and sentence language sampling.

Several investigators have used the interview type format of the PLRI with a wide variety of stimulus materials. Because looking at pictures and books is a common activity of pre- and school-aged children, Trough (1974) developed a picture description task for the appraisal of seven broad categories of language use: (1) self-describing, (2) directing, (3) reacting, (4) logical reasoning, (5) predicting, (6) projecting and (7) comparing.

Bull (1978) and Angel (1978) both employed an interview strategy in which "real life" communication situations were presented through pictures and verbal or written probes. In Bull's (1978) study, children were presented story situations in which they were expected to write something which they would say in that situation and to indicate which of two possible responses provided by the examiner they would or would not take in such a situation. Responses were developed using five social speech functions from the work of Bates and John (1971) including information, directives, inducives, evaluations and expressions.

Appel (1978) designed pictorial and verbal stimuli to elicit comments from children concerning their own or a significant other's communicative behavior (i.e., mother, teacher or peer). He selected three relevant attributes of the communication situation around which the stimuli were designed: (a) the function of communication (social or non-social), (b) the significant other within the situation (mother, teacher or peer), and (c) the perspective taken within the communication situation (self or other). For example, one stimulus item, a picture of a teacher who was trying to explain why a child could not have a book to read, was accompanied by the verbal prompt "What would she say?"

Beitcher (De Larosa, Becklund, Redmond & Barber, 1982) also used an interview format to examine children's ability to use seven functions of communication -- assertive, conversative, descriptive, directive, explanatory, corrective and persuasive. In her study, a series of preestablished probes were presented to children accompanied by other stimulus material.

Loose (1980) developed the Language Boundary of Speech Act Performance (LBSPAP), a criterion-referenced test, to evaluate the speech act production of children, ages 3 to 5. LBSPAP measures the production of eight commonly used speech acts including requests for objects, requests for action, assertions, denials, statements of information, requests for information, telling of names, and rule orders in a familiar context of the examiner's design. Loose (1980) has used art activities, preschool academic tasks and label-to-sample tasks, depending upon the background experiences of the children. Throughout the activity, the examiner presents a series of probes, questions and questions to elicit the desired speech acts. For example, to get the

children to make assertions, the experimenter asks them to tell something about a picture which they have previously drawn.

A number of investigators have used role playing situations to test a variety of communication skills. Brown (in Clark & Clark, 1977) and Brown (1976a) used puppets to elicit various direct and indirect speech acts from children. Brown (in Clark & Clark, 1977) encouraged children to convey directives-asking, ordering, forbidding and permitting-and a commissive-permitting to Felix, a large toy cat for whom the experimenter acted as speaker. To get a child to ask for something, Brown (in Clark & Clark, 1977) used the following script:

Felix are at a playground with Felix. He is sitting on the swing and you are sitting on the slide. (He you're like Felix so let you swing too. What do you say to Felix?)
[p. 391]

After each attempt to get Felix to comply with the directives, Felix refused with increasing obstinacy until the child produced four versions of the relevant speech act.

Using a similar strategy, Brown (1976a) encouraged twelve children to use polite forms in asking Sigmund Mouse, an elderly, grey-haired puppet, for several pieces of candy. After the first request, children were rewarded with a candy and encouraged to ask once more politely for another piece of candy.

Foreman and Lohr (1977) explored the structures and strategies of children's arguments by having pairs of children perform a variety of role plays. In two of the role plays, there was a scenario issue to be discussed, i.e., who is to end up with a ball or pencil. In the other two role plays, there were more abstract issues involving-who is the strongest and who is the weakest. The authors concluded

that although certain aspects of role plays are not representative of spontaneous verbal exchanges, the techniques used in role plays also appear in everyday interactions.

Some investigators (Harris & Levy, 1958; Stern, 1953; Sperry et al., 1956; Stern, 1959; Schuchter et al., 1956) maintain a partial approach to language and communication sampling by collecting data through unobtrusive observation. While this strategy represents the utmost degree of ecological validity, it is not always the most efficient, efficient, or practical strategy to employ. Lieber (1974) raises an important issue about using production data alone to infer the nature of linguistic knowledge in a child. Because speech is a joint function of linguistic competence, various performance factors and communicative competence, all of these together determine the final product. If a certain structure or function of communication is not observed in the sample, how can we decide whether it means the child has not yet acquired that element or simply has not used it. Lieber (1974) concludes that there are no methodological surpluses to be drawn from the investigation.

The third is that the spontaneous speech of children provides at best a skewed estimate of their linguistic competence. The natural error is that any sampling of the spontaneous speech of children should be compared with a control sample of spontaneous speech taken from fluent speakers in a relatively comparable situation. . . . This effort has provoked against the double standard of comparing one's children's performance to that developmental deficit has tacitly assumed alternative explanations when those same gaps occur in the speech of a parent, friend, or even individual (p. 386-387).

Other, more practically oriented criticisms of natural communication sampling have been articulated by Stern (1958). In particular,

Rosen (1970) remarked about the considerable time and expense required for taping, transcribing, coding and data analysis.

The Literature in Summary

With the recent shift in perspective from psycholinguistic to sociolinguistic emphases in the study of communication development, a number of investigators, from a wide variety of disciplines, have begun to make significant contributions to the body of knowledge about how children use language in everyday situations. As with most literature on communication development, the initial focus of these studies has been the young child, from 0 to 3. Little effort has been directed toward an evaluation of school-aged children's skills in this area, even though it has long been suggested that a significant link may exist between skillful language use and success in school. Children whose predominant mode of language use conflicts with that of the school are in serious trouble. The likelihood that they will achieve their maximum potential in the classroom is doubtful, for language serves not only as an important subject of instruction, but also as the primary channel through which that instruction is carried out.

It is clear that some children bring many of their class-managers from home . . . but it is just as clear that the school, itself, through its failure to recognize the complexity of the language problem, creates many more disadvantaged children (Opstein, 1971, p. 150).

In order to eliminate some of these avoidable classroom failures, measurement strategies appropriate for assessment of the various ways in which language is put in school must be developed so that children who may be functioning at less than adequate levels can be identified and helped. Children who are language-impaired relative to the

Linguistic systems of content and form and children who are language-impaired) with regard to those same contents may be among those whose use of language does not serve them adequately in the classroom.

It is apparent that a comprehensive system for the measurement of language in the classroom is not currently available, although a number of guidelines exist for the development of such a system. This system should reflect sociolinguistic trends and be capable of identifying children's mastery of a set of communication strategies appropriate for a wide variety of academic situations. It should be designed specifically to deal with the special features of communication in the classroom, while still incorporating some means of differentiation within the large class of cognitive communication strategies. Because a number of theorists have described the "speech act" or "communicative act" as the pivotal unit of language in communication, such acts would appear to be a logical organizing principle for the system just prescribed. Austin (1961) and Searle (1969) note that common, recurring routines such as requesting, reporting, providing and arguing are the basic units of human interaction. "The speech act approach examines human purposes as they occur naturally when people talk to each other" (Good, 1976).

In the present investigation, the Functional Inventory of Cognitive Communication Strategies was designed to identify the wide variety of language uses and strategies reflective of the young child's growing ability to use the language system to achieve meaning. The Framework for the classification of the cognitive uses of language, developed by Tough (1974, 1975) served as the basis for the creation of the stimulus items in FICS. In Tough's (1975) system, the basis

acts of communication called "speech acts" or in other instances "thought acts" are subsumed under four major functions of communication:

Reporting, Logical Reasoning, Persuading and Projecting. Using a illustrated storyline, children's habitual strategies of language use are elicited in response to a series of pictures which illustrate the storyline of The Black Rider Story Line. It is believed that this technique most closely simulates the interaction that occurs between teacher and child in the classroom setting. Because questions and answers account for approximately 40 percent of the exchanges that take place in the classroom, this format would appear to result in the most ecologically valid indication of the children's skill base when confronted with the communicative demands of the classroom.

CHAPTER 3

METHOD AND PROCEDURES

Subjects

The four groups of subjects in this study included one group of language-impaired children and three groups of language-normal children. The groups were selected as follows:

Language-Impaired Group (L1)

Two language-impaired children, five at each of two age levels, 6 years (plus or minus 3 months) and 7 years (plus or minus 3 months) were selected after screening 22 language-impaired children relative to several selection criteria. At the time of testing, all subjects had been enrolled in an elementary school program in either Wilkes or Avery counties in North Carolina for a period of not less than four weeks and were receiving speech and language therapy. Subjects were identified as language-impaired on the basis of depressed performance [41.2% percentile] on the Reading Language Screening Test (Macdon, 1979) and the clinical judgment of a certified speech, language and hearing clinician. A child was reported as language-impaired if he demonstrated a disruption of accurate output which included the language components of content, form and use, resulting in reduced comprehension and production of linguistic messages. This primary linguistic deficit occurred in children who did not otherwise evidence deficits of cognitive function

retarded), sensory (hearing impairment), physiological (cleft) and/or neurological (epilepsy) function or differences with respect to bilingual or bicultural language systems.

To assess the possible influence of certain variables which might affect linguistic and communicative performance, all subjects were to have been identified as Caucasian and middle-class. Although it was possible to control for racial differences, it was not possible to control for the influence of social class on linguistic and communicative performance. All language-impaired children used in this study came from families of lower-class socioeconomic status (SES) as determined by Hollingshead's (1980) two-factor index of social position, a measure which operationally defines social position in terms of occupation and education of the head of the household. The social class index of children in the language-impaired group ranged from 44 to 89, placing them either in Class V of VI or Hollingshead's lower-class scale.

Tables 3 and 4 present a descriptive summary of pertinent subject characteristics for the language-impaired group.

Language-normal groups

Two language-normal control groups were employed. Leonard, Belbin and Miller (1981), in a study of semantic relations used by language-normal and language-impaired children, demonstrated the utility of making comparisons under both matched age and matched semantic length conditions. Comparisons by matched age showed how the language skill of an impaired speaker parallels that of a normal peer, whereas comparisons by matched semantic length suggested how the language skill of an impaired speaker approximates that of a younger, normal child at

Table 3
Subject Characteristics for Language-
Impaired (LI) & Non-LI

SUB- JECT	AGE IN MONTHS	SEX	SOCIO-ECONOMIC INDEX CLASS		Cauc STAN- BORD		RLT AGE		MLU-M
			INDEX	CLASS	AGE	SCORE	AGE	SCORE	
1...	75	M	61	IV	69	5	88	2	4.583
2...	75	F	63	V	69	5	88	2	4.528
3	73	F	63	V	69	5	77	1	5.528
4	75	M	61	IV	78	5	83	2	5.668
5	74	M	68	IV	78	5	94	4	5.175
RANGE	73-75		57-68		69-78		69-94		4.583- 5.668
MEAN	74.4		64.8		75		81.4		5.110

OME = Columbia Revised Memory Scale

AGE = Age-Revised Score

RLT = Revised Language Learning Test

MLU-M = Mean length of utterance

Table 4
Subject Characteristics for Language-
Impaired Q.11 2-Year-olds

AGE- LEVEL	AGE in MONTHS	SEX	DPP (DIXON 1)		CARE		BLST		ALL-IT
			INDEX	CLASS	AGE	STN- AGE	RAW	SCALE	
4	27	M	85	4	104	5	54	5	5.110
7	33	M	68	14	85	4	33	3	5.110
8	33	F	71	14	50	4	54	17	4.885
9	31	F	58	12	85	4	84	4	4.815
10	31	M	54	12	54	5	67	3	3.842
<hr/>									
MEAN	31-32		64-85		85-104		64-84		5.885- 4.885
SD	3.5		16		24.5		20.3		1.254

DPP = California Revised Nonverbal Scale

AGE = Age Description Score

BLST = British Language Screening Test

ALL-IT = Non Length of Utterance

the same general stage of linguistic development. Differences in language skill observed between the groups matched for age but not between those matched for experience length suggest that the nature of the difference could best be described as a general developmental delay in language acquisition. Conversely, differences in language skill observed between the groups matched for age as well as those matched for experience length suggest that the observed differences are better characterized as delays. The investigators (Lusvardi et al., 1990) concluded that the employment of both matching strategies in comparative studies of children's speech should be useful in resolving the question of delayed versus delayed structural development. It follows that a similar research design should clarify the nature of an impairment in the selection and use of specific communicative strategies.

Language-Impaired Group 1 (LGI) The first language-impaired group included ten lower SES, Caucasian children, five at each of two age levels, 4 years (plus or minus 3 months) and 7 years (plus or minus 3 months). All subjects were selected after completing 44 lower SES elementary school children enrolled in kindergarten and first grade in twenty-two urban schools in North Carolina according to several selection criteria. At the time of testing, all subjects had been enrolled, for a period of not less than four weeks, in a public school setting and most were currently receiving speech and language therapy. All subjects were judged language-impaired on the basis of performance on the Language Learning Test (Ellis personality Questionnaire, 1977) and clinical observation. Other criteria for selection included:

1. Mental intelligence as measured by the performance of the Bayley Mental Inventory Scale (BMS) (Bayley, 1930, 1931)

2. Native speakers of English from nonbilingual homes as determined from school records

3. Absence of gross peripheral defects of audition or vision as determined by teacher interview

4. No previous history of speech, language and/or hearing problems as determined by school records and teacher interviews

Tables 3 and 4 present a descriptive summary of pertinent subject characteristics for Language-Retard Group 1.

Language-Retard Group 2 (N=15). The second language-retard group included ten lower IQ, Caucasian children matched on the basis of general language level with the language-impaired group. General language level was determined by calculating the mean number of morphemes (adapted from Brown, 1973) per comprehension unit (Cohen, 1963, 1964). Subjects were selected after comparing 37 lower IQ children relative to several selection criteria. These children had been enrolled, for a period of not less than four weeks, in a preschool setting in Avery and Wilkes counties in North Carolina. At the time of testing, none was enrolled in speech and language therapy. Subjects were judged language-retard on the basis of performance on the Bayley Language Inventory (BIL) (30th percentile) (Bayley, 1931) and clinical observation. Characteristics for inclusion were the same as those for GR1.

Table 7 presents a descriptive summary of pertinent subject characteristics for Language-Retard Group 2.

Table 3
 Bilingual Development for Lower Socio-
 economic & Language-Normal Child
 0-4-year-olds

AGE- GROSS	AGE IN MONTHS	SEX	LANGUAGE		CBRS		RLST		WORLD
			RECEIVED	CLASSED	AGE	SCORE	AGE	SCORE	
11.	25	M	58	18	20	4	131	74	5-408
12.	21	F	51	18	107	4	110	74	5-794
13.	28	F	64	18	57	5	134	50	5-894
14.	24	M	58	18	100	4	120	70	5-140
15.	23	M	58	18	50	4	100	74	5-408
total	89-75		44-54		12-108		115-134		5-100- 5-894
mean	25.2		52.8		25.4		125.4		5-386

CBRS = Columbia Revised Maturity Scale

AGE = Age-Verbalization Score

RLST = Receptive Language Screening Test

WORLD = Word Length of Utterance

Table 4
Subject Characteristics for Later Test Sessions:
LanguageNormal (LN) Participants

Age- Group	Age in Months	Sex	Cognitive Ability		Cerebral Status		ELF		MLU-R
			IQ	Class	Age	Side	Age	Class	
16L	87	M	44	26	89	L	135	33	7.281
17L	88	F	30	26	100	R	135	31	8.382
18L	87	M	38	18	98	R	136	29	9.138
19L	88	F	31	18	100	R	134	36	8.681
20L	88	M	44	18	108	L	133	28	8.405
Mean	87.6		37.6		99.6		133.6		8.367
SD	1.4		6.5		10.4		1.0		1.077

CPIQ = Columbia Parent Interview Scale

AGE = Age Development Score

ELF = Stanford Language Screening Test

MLU-R = Mean Length of Utterance

Table 2
Subject Characteristics for Language-Behavior
[LBB] Dataset for Estimated Length

SUB- JECT	AGE in MONTHS	SEX	SOCIODEMOTICS		DADS		PLST		MLP-R
			INCOME	CLASS	AGE	SEX	AGE	1/1/1	
01	66	F	51	18	100	6	40	80	4.100
02	66	F	55	18	98	5	35	85	4.481
03	62	F	47	18	105	6	36	78	5.000
04	68	F	60	8	110	6	36	78	5.115
05	61	M	58	18	104	6	37	87	5.187
06	61	F	33	8	101	5	30	78	5.190
07	59	F	60	8	109	5	38	78	5.285
08	63	F	56	18	108	5	70	75	6.014
09	51	M	58	18	97	5	78	70	6.231
10	51	F	58	17	85	6	78	70	6.831
mean	64-63		61-73		102-110		63-121		5.831- 6.481
sd	5.4		16.8		10.5		21.8		0.703

DADS = Columbia Mental Maturity Scale

AGE = Age Definition Index

PLST = Peabody Language Sampling Test

MLP-R = Mean Length of Utterance

Language Normal Group 3 (LNG). Because of the generally depressed economic level in the non-rural area in which the study was conducted, all subjects previously identified came from families of lower socioeconomic status. These subjects represented the average economic level of the majority of individuals in this geographic area, as substantiated by the fact that approximately 20 percent of all children enrolled in the elementary schools included in this study were participants in the subsidized school lunch program (characterized, personnel remembered). Eligibility for this program is determined by family size and income scales. Children from families whose income is as or below the levels indicated may receive free milk and meals or meals at a reduced price. Appendix A contains a reproduction of family size and income scales for Avery and Wilkes County schools.

Since many investigators (Block & Tucker, 1974; Gordon, 1978; Schapator, Eisenhart, Riga, Friedman & Sanders, 1974; Tappé, 1976) have noted the interrelationship of language and culture, a third (language-normal) group (LNG) was included in the study to examine the influence of social class on language use. Ten Caucasian, upper-middle SES, language-normal children, five at each of two age levels, 5 years (plus or minus 3 months) and 7 years (plus or minus 3 months), were selected after screening 20 upper-middle SES children relative to several selection criteria used for the establishment of LNL and LNL. The designation of upper-middle SES was made on the basis of Hollingshead's (1962) two-factor index of social position. Assignment to this social class category required a Social Index which ranged from 11 to 21, placing the children in Class I or II of Hollingshead's four-class scale.

Tables 8 and 9 present a descriptive summary of pertinent sub-
 just characteristics for language-normal Group 1.

Overview

Classification of the Acquisition

Act of Language

The framework for the classification of the cognitive uses of
 language developed by Tough (1974, 1977) served as the basis for the
 creation of the checklist. Based on the Functional Inventory of Acquisition
Communication Strategies (FICIS) Table 1 presents an outline of
 Tough's (1974) functional classification scheme. Operational defini-
 tions and examples of the various communication strategies can be found
 in Appendix F.

The Functional Inventory of Acquisition Communication Strategies (FICIS)

In developing an inventory of the cognitive uses of language, it
 is necessary to identify the kinds of meanings that the child is able to
 express through the use of language. Tough's (1977) functional classi-
 fication of language use permits the identification of a wide variety of
 language uses and strategies reflective of the child's growing ability
 to use the language system to convey meaning. As Tough (1974) writes:

Language provides the medium through which thinking can
 be discussed and, . . . the very use of language and the
 continuous experience of being actively users of language,
 influences not only the way in which the child will use
 language but more important, the way in which he will
 think, and the kind of interpretation he will make of
 his experiences. (p. 26)

Tough (1974) has developed two sets of six pictures each, Black
Picture Sets Large and Red Pictures Big Large, for the purpose of helping

Table 2

Subject Characteristics for High- and Low-achieving
Language-Normal (NL) 6-Year-Olds

Subject ID	AGE in months	SEX	SOC ECONOMIC CLASS		IQ		FLET		MLU-R
			PROF	CLASS	AGE	STAN- ARD	RAW	STAN	
11	75	M	22	11	98	4	130	75	6.475
12	75	F	22	11	105	4	131	76	7.485
13	83	M	22	11	94	4	128	68	6.158
14	83	F	22	11	100	4	126	69	5.473
15	71	F	22	11	108	4	126	69	6.815
mean	76-75				99-100		126-131		6.870- 7.485
mean	71-8		22		100		128-3		6.545

IQ = Evaluation Manual Intelligence Scale

AGE = Age Description Score

FLET = Finkbein Language Screening Test

MLU-R = Mean Length of Utterance

Table 3
Subject Characteristics for Higher Socioeconomic
Language-Retard (HLR) 7-Year-Olds

SUB- JECT	AGE IN MONTHS	SES	SOC ECONOMIC CLASS		IQs		BLIT		WJ-R
			1980	1981	1980	1981	804	805	
36	84	8	13	1	104	6	104	100	4.951
37	81	7	23	11	104	6	110	90	3.948
38	82	8	22	11	100	6	107	97	3.483
45	82	8	22	11	101	5	101	95	4.504
46	81	8	23	11	94	5	104	86	3.405
GROUP	81-84		19-23		98-110		106-110		4.944- 3.405
MEAN	82		20.6		103.4		103.4		3.850

IQs = Wechsler Mental Maturity Scale

AGE = Age in Months Score

BLIT = Boston Language Screening Test

WJ-R = Word Length of Response

teachers to make appraisals of children's language use. The pictures were employed for the elicitation of language use in this study so that the data obtained would be of the same composition, and thus, easily usable, by other investigators employing Slobin's (1974) system (see Figure 2). The Simple Stories Test Book pictures were chosen for this study because of the sufficiently detailed nature of the subject matter and the familiarity of its content for young children.

The pictures which illustrate the storyline of the Simple Stories Test Book are 2 1/2" by 3 1/2" black-and-white line drawings. Each drawing contains sufficient detail involving actions and incidents to provide children with the cues which they need to demonstrate the full range of their thinking. The varying storylines depicted in each offers children evidence for making interpretations that carry forward from one picture to the next. Although the problems associated with collecting a representative sample of language use from static pictorial representations is recognized, it was nonetheless the task of choice in this study for a number of reasons. First, in the elicitation of oral language samples, pictures are the third most frequently employed (Gardner-Mackley, Macmillan & Hughes, 1980). Second, looking at pictures and books is a common pre- and elementary-school activity which children seem to enjoy (Hughes, 1981). Third, the use of a standard set of selected pictures ensures the comparability of responses within a single subject and across subject populations. And, finally, picture description is a task easily adaptable to a variety of sampling designs.

A series of eight question pairs, designed to elicit a wide variety of cognitive communication strategies, was developed to accompany each picture. A complete list of these questions is included in



Figure 2
Black Kitten Gang (left)

Illustration by [illegible]

Illustration by [illegible]

Appendix E. A similar set of questions also was developed to accompany the first picture in the story sequence *And There's His Lamb* for the purpose of modeling and practice in the elicitation protocol. A list of these questions is also included in Appendix E. Many of the questions used with each picture were selected from those suggested by Tough (1986).

Tough (1986) subscribes to Piaget's (1952) "clinical method" of interviewing children in which the interviewer poses a question, then invites the child to talk more expansively by following rather than leading the discussion. Thus Piaget (1952) and Tough (1986) are most interested in the child's underlying thought and logic, oral language serves as a window into the child's cognitive processes (Barnes-Rubin et al., 1989). Although the intent of this study is similar, the clinical method could not be adopted since it requires the interviewer to frame questions in response to the child's "lead" and thus, no two children necessarily receive the same questions at the same experimental treatment. Although the clinical value of such a strategy is without question, it does not readily lend itself to analysis by the statistical procedures necessary for testing the research hypotheses in this study. Therefore, a standard set of questions to be presented in a structured interview to each child was developed.

Lahav (1986) has criticized all adult efforts to elicit representative speech from children using a question-answer format. The alternative which he proposes, though ingenious, was not appropriate for this study. Lahav (1986) asked a group of children to take care of his pet rabbit for a few minutes while he left the room, and to talk to it so that it would remain calm and unafraid. While he was gone, he left the

tape recorder running to pick up the children's conversation. Labov's (1972) observations emphasize the important influence of certain situational parameters on children's conversation and underscores the necessity for collecting language samples in a variety of contexts if truly representative samples are to be obtained.

The question-answer format was selected as the sampling strategy in this study for two reasons. Question-answer exchanges between teacher and child account for 60 percent of all communication in the classroom, with child initiations assumed for less than 10 percent (Dunkin & Ebbels, 1974). Although other sampling conditions might produce language which is structurally and conceptually more complex, this would not represent the type of classroom situation in which the child must adjust to achieve academic success. Ideally, the imposition of structure upon the sampling strategy permits determination of qualitative differences between any single child's responses and those of his peers or between normal and impaired language users.

Procedures

Collection of the Language Sample

A language sample was obtained from each subject following the protocol in Appendix C. Collection of the samples occurred at the subject's school in a quiet room normally used for speech and language evaluation. During the sampling procedures, only the clinician and child were present in the room. The same clinician collected all samples.

The language samples were recorded using a Researcher, model RQ-100 1, portable tape recorder with a Lafayette, model RL-3,

confrontational facial expressions. Total recording time ranged between 17 and 26 minutes.

After a two-minute period of informal conversation, the child was presented the following standard instructions and entered appropriate responses in a set of practice stimuli:

I'd like you to tell me some stories. I'm going to show you some pictures and I'd like you to make up a story for each picture. For example, let me show you how to do it. [Presents Red Rides His Horse, Picture A.]

Set 1: Suppose I asked you to tell me all about this picture. You might say, it looks like this has made some trouble when Red Rides and Red has gone off and forgotten them.

Set 2: Then suppose I asked you, what is the man doing here? You might say, he's going to work. And suppose I said, who is he doing that? You might say, he is the man that works for his family.

Set 3: And then suppose I said, how do you think Red feels? You might say, the horse very sad cause Red has forgotten his horse.

Following these activities, the stimulus presented a set of three pictures that he instructs all subjects for the ability to perform the task as instructed and to allow for adaptation to the language sampling setting. To be included in the investigation, subjects were required to respond appropriately to two out of the three practice stimuli either as a result of the initial stimulus or the prompt. Prompts were supplied when a subject refused to respond after a two-second pause following the examiner's stimulus, produced a response such as "I don't know," or initiated a response which was more than 20 percent unintelligible. Encouragement was offered throughout the child's response by using certain paralinguistic devices such as head nodding, smiling, and vocalizing "uh-huh."

Practice Items

- Item 4: a. What do you think the boy is thinking?
 b. If you were the boy, what would you do?
 Item 5: a. Can the boy make the bear hear that? Why doesn't
 you think so?
 b. Does the bear hear the boy? Why doesn't you think
 he hears that?
 Item 6: a. What do you think the children will do next?
 b. Will the children try to catch their cat? How
 will they do it?

To ensure consistency in the method of obtaining the language sample, a series of eight "questions" were presented to each subject for each of the test pictures. Pictures are included in Appendix B. Prompts were offered for the same instances of inappropriate responses detailed above and encouragement was freely given to enhance verbal productivity. At the conclusion of each set of eight "questions," a statement which summarized the central meaning displayed in each picture was presented by the clinician so that responses to subsequent items would not be influenced by unusual interpretations to previous questions. The "questions" are included in Appendix E.

Transcription and Segmentation of the Language Sample

All language samples were orthographically transcribed by the same clinician, within a week of the recording date. Labov's (1965, 1968) segmentation protocol was used to identify all orthographic language units. An outline of Labov's system may be found in Appendix B.

Analysis of the language sample

Based on the developmental level of the subjects, linguistic and functional measures, which would best reflect the linguistic and communicative performance of children at the stage of systematic exploration and refinement (Harris, 1954; Nelson & Nelson, 1978), were selected to analyse the language samples. Some of the critical aspects of children's advanced linguistic and communicative skills included verbal productivity, syntactic complexity, syntactic length, syntactic complexity and language use. To quantify these five areas, 17 measures were used to analyse each language sample. For a list of these measures, see Table 10.

Verbal productivity. These measures evaluated quantifiable variations in verbal output by assessing the number of units produced in response to a predetermined number of stimuli in the sampling procedure.

1. Total Number of Utterances (Total Utts). A communication unit may be defined semantically and structurally. According to Lohan (1960), Harris (1944) first described the communication unit in semantic terms as "... a group of words which cannot be further divided without the loss of their essential meaning" (p. 30). Because this definition proved to be ineffectually subjective for reliable application, Lohan (1963, 1974) redefined the communication unit in structural terms as an "... independent clause with all of its modifiers" (p. 34). Most communication units fit this structural description, however, because of the reciprocal nature of spoken language, Lohan (1963, 1974) expanded the definition to include two

Table 10

Language Sample Analysis Measures

VERBAL PRODUCTIVITY

1. Total Number of Communication Units (MCU's)
2. Total Number of Words (TW)
3. Total Number of Morphemes (TM)

SYNTACTIC COMPLEXITY

4. Percentage of Complete Communication Units (CUC's)
5. Mean Length of Communication Units in words (MLU-W)
6. Mean Length of Communication Units in Morphemes (MLU-M)
7. Mean Length of the Five Longest Communication Units (MLU-5)

SYNTACTIC COMPLEXITY

8. Developmental Language Score (DLS)

LANGUAGE USE

9. Overall Functional Language Score
10. Reporting Subscore
11. Logical Reasoning Subscore
12. Predicting Subscore
13. Projecting Subscore
14. Labeling (Gpr-1)
15. Referring to events (Gpr-2)
16. Referring to individuals (Gpr-3)
17. Referring to the sequence of events (Gpr-4)
18. Asking questions (Gpr-5)
19. Exemplifying related aspects (Gpr-6)

LANGUAGE USE (continued)

20. Extracting the central meaning (Gpr-7)
21. Reflecting on the meaning of experiences (Gpr-8)
22. Explaining a process (Gpr-9)
23. Recognizing causal and dependent relationships (Gpr-10)
24. Recognizing problems and solutions (Gpr-11)
25. Justifying judgments and actions (Gpr-12)
26. Reflecting on events and drawing conclusions (Gpr-13)
27. Exemplifying principles (Gpr-14)
28. Anticipating/Forecasting (Gpr-15)
29. Anticipating the details of events (Gpr-16)
30. Anticipating a sequence of events (Gpr-17)
31. Anticipating problems and possible solutions (Gpr-18)
32. Anticipating and recognizing alternative courses of action (Gpr-19)
33. Predicting the consequences of actions or events (Gpr-20)
34. Projecting into the experiences of others (Gpr-21)
35. Projecting into the feelings of others (Gpr-22)
36. Projecting into the expectations of others (Gpr-23)
37. Projecting into situations never experienced (Gpr-24)

other structural categories) (c) answers to questions which lack only the repetition of the question elements to satisfy the criterion of independent predication, and (d) answers of "yes" and "no" given in response to positive questions.

For the purpose of the present investigation, a communication unit was defined either as an answer to a question or as a grammatically independent predication, together with any related subordinate clauses, which could not be further divided without the loss of essential meaning. These units were separated and tallied following the protocol presented in Appendix E.

3. Total Number of Words (TNW): The standards adopted from McCarthy (1958) and refined by Sachs (1959) were used to determine how words should be counted. The total number of words produced in response to the stimulus pictures was calculated and recorded. For a detailed account of these standards, see Appendix F.

3. Total Number of Syllables (TNS): Rules for counting morphemes have been established by Brown (1973). A description of these rules is presented in Appendix G.

Structural Complexity: This measure evaluated the structural integrity of the child's response.

4. Percentage of Complete Communication Units (CCU): The emerging use of complete communication units by young children (Lee, 1974; Swanson & Peterson, 1976) is attested by this measure. Harris-Buckley, Macauliffe and Rejzler (1976) suggested that the percentage of complete communication units "may be a stable characteristic of the normal language of children 5 years of age and older, but may be a

developmental characteristics for younger children" (p. 94). Others (Leonard, 1981; Smith & Blum, 1977) have noted that language-impaired speakers produce significantly more compliant communication acts than language-impaired speakers.

For the present investigation, utterance compliance was defined as the substitution of a noun phrase element with a verb phrase element. The formula employed to calculate the percentage of compliant communication acts is as follows:

$$\frac{\text{COMPLIANT ACTS}}{\text{TOTAL ACTS}}$$

Syntactic length. These measures indicated the average and maximum length of the subject's spontaneous utterances and provided an indirect indicator of early syntactic maturity.

5. **Mean length of communication acts in words (MLUw).**

McCarthy (1980) originally described average sentence length as "the simplest and most objective measure of the degree to which children combine words in the various ages" (p. 583). More recently, she has noted that no measure "seems to have surpassed the mean length of utterance for a reliable, easily determined, objective, quantized measure of early understood features of linguistic maturity" (McCarthy, 1984, pp. 589-591). Smith (1977) found this measure correlated highly with other measures of language development. The formula for calculating mean length of communication acts in words is:

$$\frac{\text{SUM OF WORDS FOR ALL COMMUNICATIVE ACTS}}{\text{TOTAL NUMBER OF ACTS}}$$

6. **Mean length of communication acts in morphemes (MLUm).**

Several authors (Harris-Friedley, Nelson & Furrow, 1984; Brown, 1973;

French & Gottlobson, 1970) have used mean length of utterance (in words) as a measure of utterance length. Harter-Blacking et al. (1980) indicated that MLU-R² explains linguistic complexity more than does MLU in words, presumably making it a more sensitive measure (p. 311).

In the present study, general language level was operationally defined as the mean number of morphemes (Brown, 1973) per communication unit (Lieber, 1983, 1984). This measure was selected as the general indicator of linguistic maturity because it has been shown to reflect developmental changes at least up to 7 years of age, and in some cases, apparently beyond age 7 (Harter-Blacking et al., 1980). Although Brown (1973) claimed that developmental level is not reflected by increasing average utterance length past an MLU of about 4.0, other investigators (Lieber, 1983; Austin, 1975; P. Howell, 1967) demonstrated developmental differences in MLU-R in young school-aged children. Austin (1975) found that MLU-R differentiated between children in kindergarten and third in second grade. Lieber (1984) found a relatively steady increase in mean number of morphemes per communication unit for the same subjects from kindergarten through twelfth grade. He concluded that "From the standpoint of obtaining a simple, straightforward method to measure the degree of fluency with language, the average number of words per communication unit appears to be an exceptionally good device" (Lieber, 1984, p. 34).

In a similar analysis, P. Howell, Griffin and Beverly (1960) used the T-unit, an equivalent measure to the communication unit, as the basis for calculating mean length measures. They found increases in T-unit length of varying magnitude from grade to grade, and concluded that mean length of utterance "is a sensitive measure of development

lexical similarity in children's language production" (Cresswell et al., 1987, p. 444).

The formula for the mean number of morphemes per construction unit is

$$\frac{\text{SUM OF MORPHEMS}}{\text{TOTAL NUMBER OF CUs}}$$

Rules for counting morphemes appear in Appendix 6.

7. Mean length of the five longest utterances (MLU-5): Lewis (1971) first suggested that the mean length of the five longest utterances might serve as good indicator of language fluency skills—the best performance a subject can produce in a given situation. This measure was calculated by totaling the number of words in the five longest constructed units and dividing by five.

Syntactic complexity: This measure evaluates the level of grammatical sophistication which the child's utterances represent and categorizes them according to structural type.

8. Developmental Sentence Score (DSS): The DSS provides a quantitative index of the expressive use of selected syntactic structures in spontaneous speech, including indefinite pronouns and noun modifiers, prepositional phrases, noun series, secondary verbs, negatives, conjunctions, comparative numerals and adjectives.

The last 30 complete, different, consecutive, intelligible, nonrepetitive sentences in each sample were used for this analysis. Differences in this part of the sample were segmented using Lee's (1976) rules for segmenting sentences, which differ from Lewis's (1974) with regard to coordinated sentences. A sentence was judged complete and included in this analysis if it consisted of a main and a verb in

subject-proficiency relationship. Of the 48 samples collected, none did not contain 20 complete, analysable sentences. The number of analysable sentences in these samples ranged from 40 to 48, with a mean of 46.

Following Lee's (1976) scoring procedures, each sentence containing any of the eight specified grammatical structures received a weighted score from 1 to 8 for each structure produced appropriately, plus an additional sentence point if the sentence were correct in all respects. Individual sentence scores for the sample were totaled and divided by the number of analysable sentences in the sample to arrive at the mean score per sentence or the Developmental Sentence Score (DSS).

Language map: To examine the functional use conveyed by the child's language, communication units were categorized into one of 24 cognitive communication strategies defined within Hughes' (1976) Framework for the functional analysis of language use. (See Appendix B for operational definitions and examples of each of the strategies.) Categories were mutually exclusive and exhaustive. Patterns 2-12 correspond to the 24 individual cognitive communication strategies, the four superordinate uses of language—reporting, logical reasoning, predicting, and projecting—and the overall functional language score.

STRATEGIES

- | | |
|--|---|
| 5. Labeling | 18. Anticipating problems and possible solutions |
| 10. Referring to details | 23. Anticipating and manipulating alternative courses of action |
| 11. Referring to principles | 19. Projecting the consequences of actions or events |
| 12. Referring to the importance of events | 28. Projecting into the experiences of others |
| 13. Making comparisons | 20. Projecting into the feelings of others |
| 14. Recognizing related aspects | 31. Projecting into the reactions of others |
| 15. Extending central meaning | 32. Projecting into situations never experienced |
| 16. Referring to the meaning of experiences | |
| 17. Capitalizing a process | |
| 18. Recognizing causal and dependent relationships | |
| 21. Recognizing problems and solutions | |
| 24. Justifying judgments and actions | |
| 21. Reflecting on events and drawing conclusions | |
| 28. Recognizing principles | |
| 23. Anticipating/forecasting | |
| 24. Anticipating the effect of events | |
| 25. Anticipating a sequence of events | |
| | VALUES |
| | 10. Asserting |
| | 14. Logical reasoning |
| | 15. Predicting |
| | 16. Presuming |
| | 17. WILLING |

In this investigation, only the cognitive uses of language, with the exception of laughing, were studied. Moreover a question arose about the classification of an utterance within a particular language use, the utterance was always assigned to the highest level strategy appropriate.

To evaluate the efficacy of discussion of both the talkative and the quiet child, an "interval score" was adopted from the work of Schaefer et al. (1974) as the quantitative unit of analysis. According to Schaefer et al. (1974), raw frequency scores used to describe communicative language data "distort in the direction of giving excess weight to the scores of the talkative child" (p. 71). Converting raw frequency scores to express the percentage of occurrence of individual

language categories that not resolve the problem. "Percent correct" is difficult in the direction of giving more weight to the scores of the "quiet child" (Schwartz et al., 1979, p. 81).

In this study, the "interval score" was defined as the number of observation intervals in which no more than two examples of a communication strategy occurred out of a total of six observation intervals per child. Each of six playsets in the *Black Screen Data Log* series was considered to be a separate observation interval, and within any given observation interval, a communication strategy contributed to the interval score no more than two times. Therefore, the total possible interval score for a specific communication strategy across all six intervals was 12. Interval scores were computed for each of the 24 behavioral communication strategies defined by Fong's (1970) system, as well as for the superordinate categories of language non-fluency, logical reasoning, predicting and projecting—and the overall functional language score. Schwartz et al. (1979) commented that the interval score seemed to offer "a promising compromise between the frequency data and percent occurrence data, identifying quantitative differences in speech within a grossly attenuated range (maximum = 12) of quantitative differences and thus reducing the effects of distortions of both the collection and the quiet child" (p. 81).

Reliability

Both interobserver and introbserver reliability were calculated for each of the measures of language use. For introbserver reliability, the author transcribed four language samples selected at random, one from each of the subject groups. For interobserver reliability, two raters

involved in the method of analysis, independently analyzed the same four language samples.

For each measure of language use, the percentage of inter-raters agreement was computed by a point-by-point percentage of agreement formula:

$$\frac{\text{NUMBER OF AGREEMENTS}}{\text{NUMBER OF AGREEMENTS} + \text{DISAGREEMENTS}} \times 100$$

These percentages of agreement represented the ratio of agreed observations to total observations, using each analyzed utterance as an observation. In the present investigation, a percentage of agreement of .30 was considered to be acceptable.

Scope of Application of All Tests

Four sessions were scheduled for all subjects during which the following measures were administered in the sequence indicated. All independent measures demonstrated adequate reliability and validity and were standardized on representative samples.

Session 1

Approximate time: 45 minutes

1. Children's Perceptual Acuity Scale
2. Revised Language Screening Test

Session 2

Approximate time: 40 minutes

3. Revised Inventory of Cognitive Communication Strategies
4. Children's English Language Inventory

Session 3

Approximate time: 40 minutes

6. Test of Auditory Comprehension of Language

7. Test of Language Development

Session 4

Approximate time: 45 minutes

8. Test of Basic Experiences

Selection Measures

Columbia Mental Maturity Scale (1995): The CMM (Interpreting, 1995) is an individually administered test of general reasoning ability, which is usually used when there is a need for a relatively short, easily administered and scored measure of general ability.

The CMM consists of 31 pictorial and figural classification items arranged in a series of eight overlapping scales of levels of increasing complexity. Each item consists of a series of from three to five drawings to which the subject responds by pointing to the drawing which is unrelated to the others. The use of the classification item type format, which requires no verbal response and a minimal motor response, makes the CMM especially appropriate for administration with a wide variety of developmentally delayed children.

The CMM was administered according to the standard testing protocol. Raw scores (total number of correct responses) were converted to age deviation scores (ADS) and standard for purposes of individual and group comparisons. In order to be considered for participation in

the present study, children needed to achieve a raw score equivalent to the fourth, fifth or sixth standard (400 = 45 to 480).

Revised Language Screening Test (RLST): The RLST (Kernan, 1977) was developed to fulfill three primary functions: (a) to identify children in need of further in-depth language testing, (b) to determine specific areas of language deficits requiring further evaluation, and (c) to provide a basis for case selection.

The RLST consists of a battery of 17 sub-tasks tabulated organized into five general categories: semantic knowledge, morphological rules, syntactic rules, visual perception and auditory perception. The inclusion of these general categories on the RLST was professed upon a review of these areas that language interventionists frequently evaluate and monitor in young children. The test is designed to evaluate language production, since it is through this mode that the presence or absence of impairment is generally recognized.

The test yields a raw score (total number of correct responses) which may be converted to a percentile rank. Children whose raw scores placed them at or below the 17th percentile on this instrument were considered language-impaired and included in this study if they met all other criteria for inclusion in the language-impaired group. Children whose raw scores placed them at or above the 75th percentile were considered language-normal and included in this study if they met all other criteria for inclusion in the language-normal group.

Independent Measures

Revised Original Language Inventory (ROLI): The ROLI (Kernan, 1974) measures productive control of grammar through elicited imitation

of a wide variety of grammatical forms and syntactic constructions. It was developed to circumvent problems inherent in clinical language sampling by allowing an analysis of forms and structures which the child may be capable of producing but which may not occur in a particular spontaneous sample. The GDI is a diagnostic tool which may be used to (a) identify children with language problems, (b) determine which specific linguistic structures contribute to inadequate linguistic performance, and (c) quantify language usage by assignment of a numerical score score.

The inventory consists of 51 stimuli, including 51 sentences and one phrase which range in length from two to ten words. The stimuli were developed to contain basic sentence types, single transformations and specific grammatical morphemes.

The stimulus items were read by the examiner and repeated by the subject. The subject's repetitions were recorded on audio tape using a Panasonic, model RR-330 2, portable tape recorder with a Lafayette, model RL-1, unidirectional lavaliere microphone. A total error score was computed for purposes of individual and group comparison.

Test of Auditory Comprehension of Language (TACL) The TACL (Baron, 1972) was designed to evaluate auditory comprehension of a variety of language forms and structures. The objectives of the instrument are (a) to assign a child to a developmental level of comprehension based on test performance, and (b) to identify specific areas of linguistic difficulty in need of intervention.

The TACL consists of 160 items grouped according to grammatical categories:

1. Vocabulary. This section evaluates comprehension of intermediate vocabulary items including nouns, adjectives, verbs and adverbs.

2. Reading. Comprehension of familiar words and phrases (literal and inferential) is measured in this section.

3. Syntax. A limited number of syntactic structures is evaluated in this section. These include imperatives, noun-verb agreement, complementation, modification and coordination.

The test items were presented verbally by the examiner after which the subject responded by selecting a line drawing which represented the referent for the linguistic form being tested from a field of three. Raw scores (total number of correct responses) were tallied for individual and group comparisons.

Test of Language Development (TLD). The TLD (Denes & Bassett, 1971) is a measure of language ability designed: (a) to identify children who have significant problems in comprehension and use of spoken language; (b) to isolate specific areas of language deficit, e.g., oral vocabulary, grammatic understanding; and (c) to serve as the basis for planning a program of criterion-testing and diagnostic teaching.

The test is based on a two-dimensional model of language structure. The primary dimension of the model encompasses the major sub-structure of linguistic--lexicofunction, syntax and phonology. The secondary dimension refers to the receptive and expressive modalities of language. These dimensions provide the basis for the development of the five principal and ten supplemental subtests of the TLD.

Principal Subtests

1. Picture Vocabulary. This receptive subtest measures the ability to understand the meaning of spoken words.
2. Word Regularity. On this expressive subtest, the ability to define common words is evaluated.
3. Semantic Understanding. This receptive subtest measures the ability to understand morphological markers and syntactic structures.
4. Sentence Imitation. The ability to repeat acceptable English sentences is evaluated on this expressive subtest.
5. Grammatical Completion. This subtest examines both receptive and expressive skills by requiring the subject to supply the morphological form necessary to complete spoken sentences.

Supplemental Tests

6. Word Recognition. This receptive subtest measures the ability to differentiate between orally presented word pairs that are either the same or minimally different.
7. Word Articulation. On this expressive subtest, the ability to produce relatively difficult words in isolation and in words is evaluated.

For the purposes of the present study, only the five principal subtests were administered to each subject. The standardized procedures for administration and scoring of each of the subtests were followed. Raw scores (total number of correct responses) were converted to scaled scores for making individual and group comparisons.

Test of Basic Experiences (TBE)—The TBE (Weir, 1971) is a set of standardized group tests designed to assess the richness of conceptual background of children in preschool, kindergarten or first grade. The tests provide an indication of "how well a child's experiences have prepared him for his introduction to many of the school subjects which he will encounter" (Weir, 1971, p. 4).

The TBE comprises consists of four separate tests at each of two levels—Mathematics, Language, Science and Social Studies—and one composite test of General Concepts which includes items from the other four. Level B is designed for children in preschool or kindergarten and Level L is designed for children in kindergarten or first grade.

Each subject consists of 25 items which have been carefully selected using a combination of criterion-referenced and criterion-referenced criteria. The TBE Mathematics Test measures the mastery of fundamental mathematical concepts and terms prerequisite to much of the primary mathematics curriculum. The Language Test measures basic language comprehension skills in vocabulary, sentence structure, verb tense, morphological relationships and letter recognition. It also includes items pertaining to listening skills and perception of symbols as the carriers of meaning. The TBE Science Test is designed to measure the extent of early experiences with animals, humans, plants, machinery, weather and other phenomena. The TBE Social Studies Test evaluates the child's recognition and understanding concepts pertaining to social groups, social roles, social customs, rules of society and human emotions. The General Concepts Test is composed of items from each of the other four areas and may be used as a gross measure of a child's

experiment not facilitating with either concepts. The General Concepts Test was not administered as part of the present investigation.

In this study, the presentation of the TBE was modified for individual administration. Subjects were instructed as follows:

I am going to show you some pictures (open test booklet to p. 1). Look at all the pictures (point to each of the pictures on the page from left to right) and then point to the picture which I describe.

After presentation of the general directions, the examiner administered four of the TBE subtests: Mathematics, Language, Science, and Social Studies. On all four subtests, the 25 test items were preceded by four practice items. If a subject had difficulty following the directions or understanding the task, some or all of the practice items were repeated. Subjects were required to "point to," "touch" or "put a finger on" the item described by the examiner. Directions for specific items were read by the examiner from the examiner's manual. For each item, the words "point to," "touch" or "put a finger on" were substituted for the word "touch" in the directions. A single sound sheet was used for all subtests on a particular level. The examiner marked the subject's response for each item by checking on 1, 2, 3 or 4 corresponding to the first, second, third or fourth pictures on the page. Raw scores (total number of correct responses) were tallied and converted to scaled scores for individual and group comparisons.

CHAPTER 5
ANALYSIS OF THE RESULTS

Group Comparisons

Languages Used by Language-Special and
Language-Generalized Children

Since hypotheses 1 and 2 relate to the issue of whether language-general and language-special children perform similarly on an inventory of language use, they will be treated together in this section.

To test subhypotheses 1.1 to 1.6 and 2.1 to 2.6, the performance on PICS for the language-special group (L1) and each of the two language-general control groups, L2 matched on the basis of chronological age and L3 matched for sentence length, was compared. The scores used for comparison were "interval" scores defined as the number of observable intervals in which no more than two examples of a communication strategy occurred out of a possible six observing intervals per child. Interval scores were computed for each of the 26 individual communication strategies defined by Fought's (1984) system, as well as for the representative examples of language use—reporting, logical reasoning, predicting, and projecting—and the overall functional language score. Tables 11, 12, and 13 show raw performance data for the four major categories of language use and the overall functional language score on PICS achieved by the L1, L2, and L3 groups. The data were subjected to a series of analysis of variance (ANOVAs) to determine

Table 11

Interval Scores on the Functional Inventory of
Cognitive Communication Strategies (FICCS)
Achieved by the Language-Impaired Group

SUBJECT	REPORTING	FICCS			OVERALL
		VERBAL REASONING	PERCEPTION	PRODUCTION	
1	33	21	14	26	29
2	33	9	21	22	25
3	30	6	15	13	24
4	23	11	12	11	20
5	19	9	22	18	24
6	21	6	6	12	11
7	21	12	18	16	20
8	22	11	16	12	24
9	22	8	13	18	24
10	26	4	16	14	24
RANGE	13-43	4-22	6-22	10-23	20-29
MEAN	28.5	8.2	16.1	15.8	22.2
STANDARD	10.5	5.2	10.3	10.5	12.4

Table 12

Internal Scores on the Functional Inventory of Depictive
Communication Strategies (FIDCS) Administered by
the Language-Minority (LMI) Group
Revised for Chronological Age

SUBJECT	REPORTING	FIDCS			OVERALL
		LONG-TERM ADDITIONAL	PREDICTING	PERFORMING	
11	24	3	64	10	21
12	24	11	11	20	23
13	44	15	14	18	36
14	14	14	14	22	44
15	22	12	14	18	46
16	22	12	16	14	54
17	24	12	21	18	55
18	30	14	16	14	74
19	28	14	16	18	74
20	32	22	28	22	104
RANGE	14-54	3-22	11-28	10-22	21-104
MEAN	28.0	13.5	18.2	18.6	39.5
STANDARD DEVIATION	10.0	7.4	7.4	6.6	23.0

Table 13

MAILED SCORES ON THE FUNCTIONAL BATTERY OF CAPTIVE
Commonsense, Vocabulary, [PICT] Achieved by the
Language-Normal LANE Group Matched
for Nonverbal Length

SUBJECT	REPORTING	PICT			
		LANGUAGE REASONING	FUNCTIONAL	PSYCHOTIC	OVERALL
21	13	8	10	10	40
22	29	10	10	10	40
23	26	7	9	14	30
24	21	7	9	10	26
25	23	16	12	12	40
26	30	8	12	12	32
27	23	12	12	10	34
28	28	10	12	14	40
29	22	6	10	9	25
30	22	7	10	12	29
RANGE	13-30	6-16	9-12	9-14	25-40
MEAN	25.3	8.6	11.2	12.3	30.1
STANDARD	20-3	7.5	11-5	14-5	20-8

whether differences in language use existed among the groups. According to the data in Table 14, the results of this test were statistically significant ($\chi^2 = 1.168$, $df = 2/17$, $p = .000$). Therefore, planned orthogonal comparisons were performed to examine the overall language use of the language-impaired (LI) group in relation to each of the two language-normal control groups, LRI, matched for chronological age, and LRI, matched for sentence length. The comparison between LI and LRI yielded statistically significant results using a one-tailed test ($\chi^2 = 1.847$, $p = .081$, whereas the comparison between LI and LRI was not significant ($\chi^2 = 1.402$, $p > .05$, two-tailed test). A one-tailed test was used for comparing LI to LRI, since previous and current research indicate that language-impaired children perform more poorly than their language-normal colleagues in all measures of linguistic performance. In contrast, a two-tailed test was used to examine the differences between LI and LRI, since research tends to not unequivocally determine the nature of the prediction to be made between these two groups. Although the LI and LRI groups performed as expected, with LRI achieving superior overall scores on FROF, LI and LRI did not. The LI group achieved higher overall scores on FROF than did their younger, normal counterparts matched for sentence length. The findings of this analysis, then, resulted in the rejection of H_1 and acceptance of H_2 .

A comparison of the ability to use language for the purposes of Reporting, Logical Reasoning, Predicting and Projecting was also performed for LI, LRI, and LRI using a one-way ANOVA. The summary data in Tables 15 through 18 show statistically significant differences among the groups for Logical Reasoning ($\chi^2 = 1.423$, $df = 2/17$, $p = .000$,

Table 14

Summary of Test-Retest ADEPs for the Spanish Fluency/Language
 Score on the Functional Inventory of Cognitive Communication Strategies (FICCS) Administered by the
 LI, LRP, and LRE Groups

SOURCE	LI	LRP	LRE	F	p
Reliable Groups	3	1763.668	894.424	4.189	.027
Valid Groups	47	1553.758	146.417		
Total	50	1740.644			

LI = Language-Intelligent

LRP = Language-Retrieval matched for chronological age

LRE = Language-Retrieval matched for utterance length

Table 15

Summary of Overlap ABBs for the Logical Reasoning Subtests in the
 Residual Inventory of Cognitive Compensation Strategies
 (RICE) Administered by the LI, LMI, and LMI Groups

SOURCE	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Between Groups	2	177.263	88.631	7.427	.000
Within Groups	23	108.898	4.735		
Total	25	286.161			

LI = Language-Impaired

LMI = Language-Mimics matched for chronological age

AMI = Language-Mimics matched for utterance length

Table 44

Summary of Booklog APPRA for the Producing Subgroups on the Functional Inventory of Cognitive Communication Strategies (FIOCS)
Achieved by the LI, LRI, and LRI Groups

GROUP	<i>N</i>	<i>M</i>	<i>SD</i>	<i>T</i>	<i>Z</i>
Ballroom Groups	3	150.333	88.280	4.241	.605
Wishes Groups	37	515.810	75.343		
Total	39	530.409			

LI = Language-Impaired

LRI = Language-Restricted matched for chronological age

LRI = Language-Restricted matched for utterance length

Table 17

Summary of Inventory 48884 for the Projecting Sentences on the Functional Inventory of English Core Grammar Strategies (FIGGS) Achieved by the LI, LRI, and LRI Groups

Inventory	LI	LRI	LRI	F	R
Between Groups	1	118.547	47.433	1.000	.000
Within Groups	17	248.200	9.733		
Total	18	366.747			

LI = LanguageLevel met

LRI = LanguageLevel's matched for chronological age

LRI = LanguageLevel's matched for utterance length

Table 10

Summary of Results ANOVA for the Reporting Interval on the Functional Inventory of Capitalism Communication Strategies (FICS)

Achieved by the LI, LRI, and LRI Groups

Source	df	SS	MS	F	p
Between Groups	2	63.198	31.599	4.26	.020
Within Groups	22	1486.298	68.014		
Total	24	1549.496			

LI = Longpaper/longlead

LRI = Longpaper/shortlead reported for chronological age

LRI = Longpaper/shortlead reported for syntactic length

Predicting ($\bar{X}_L = 4.241$, $\bar{X}_H = 3.17$, $g = .003$) and Projecting ($\bar{X}_L = 2.352$, $\bar{X}_H = 3.23$, $g = .003$), but no significant differences for Reporting ($\bar{X}_L = 3.829$, $\bar{X}_H = 3.17$, $g = .944$). To evaluate the significant findings, planned orthogonal comparisons were performed between LI and LRI, and LI and LRI for the Logical Reasoning, Predicting and Projecting sub-scores. Results of these comparisons revealed significant differences between LI and LRI in the use of Logical Reasoning ($\bar{X}_L = 3.828$, $g < .005$, one-tailed test) and Projecting ($\bar{X}_L = 3.051$, $g < .05$, one-tailed test) strategies and no significant differences between LI and LRI for any one category. During the language sampling task, both LI and LRI used comparable numbers of Logical Reasoning strategies, and LI used slightly fewer of these strategies than did LRI. In view of these findings, subhypotheses 1.1 and 1.2 were rejected, whereas subhypotheses 1.3, 1.4 and 1.5 through 1.8 were retained.

Further analysis was performed to determine if there were any significant differences in the use of the 29 individual communication strategies on F105 between LI and LRI and LI and LRI. Both were subjected to a two-tailed two-sidedness U-test, the results of which, including mean score ranks and U-ranks corrected for ties, are found in Tables 13 and 14. As shown, only four communication strategies, one from each major language use category, exhibited a significant statistical difference between the LI and LRI groups. These included strategy 7, Extracting or Reorganizing General Meaning ($\bar{X}_L = 10.5$, $g = .001$), strategy 11, Inferring or Deducing and Drawing Inferences ($\bar{X}_L = 15.4$, $g = .001$), strategy 18, Anticipating Problems and Possible Solutions ($\bar{X}_L = 25.4$, $g = .001$), and strategy 23, Projecting into the Feelings of Others ($\bar{X}_L = 12.5$, $g = .001$). In each case, the LRI group

Table 15

A Comparison of Communication Strategies on the Functional Inventory of Cognitive Communication Strategies (FICCS) Used by Language-Impaired (LI) and Language-Normal (LN) Groups
Retarded for Chronological Age

COMMUNICATION STRATEGIES	LANGUAGE-IMPAIRED (n = 18) Mean Rank	LANGUAGE-NORMAL (n = 18) Mean Rank	PAIRED-SAMPLE T-TEST	Z
REPORTING				
1. Labeling	12.11	8.50	16.0	.001
2. Referring to detail	11.11	7.50	12.0	.001
3. Referring to incident	11.44	7.50	16.0	.001
4. Referring to the sequence of events	9.11	11.00	16.0	.001
5. Making comparisons	12.44	10.50	12.0	.001
6. Describing related events	9.44	11.00	12.0	.001
7. Narrating or recapitulating the incident involving the individual receiving	8.44	14.50	16.0	.00001
8. Referring to the meaning of experiences	12.44	10.10	17.0	.001
OTHER STRATEGIES				
9. Explaining a process	8.44	12.00	24.0	.001
10. Recognizing causal and dependency relationships	9.33	13.00	44.0	.000
11. Recognizing problems and solutions	9.00	11.00	16.0	.001
12. Justifying judgments and actions	8.33	12.00	24.0	.001
13. Reflecting on others and drawing conclusions	9.00	16.00	12.0	.00001
14. Interpreting activities	9.33	13.00	16.0	.001
PROBLEM SOLVING				
15. Anticipating/forecasting	10.20	12.00	16.0	.001
16. Anticipating the detail of events	10.50	12.00	16.0	.001
17. Anticipating a sequence of events	9.50	11.50	14.0	.001
18. Anticipating problems and possible solutions	8.00	13.00	24.0	.00001
19. Anticipating the consequences/alternatives/meaning of actions	9.44	11.50	15.0	.001
20. Predicting the consequences of actions or events	9.25	11.10	24.0	.001

Table 19 (Continued)

COMMUNICATION STRATEGIES	LANGUAGE- ADAPTIVE (N = 100) Mean Rank	LANGUAGE- ADAPTIVE (N = 100) Mean Rank	PAUSE- SENSITIVITY (N = 100)	p
<u>PROJECTING</u>				
20 Projecting how the experi- ences of others...	5.35	10.30	35.0	28%
21 Projecting how the feelings of others...	7.35	12.00	18.0	21%*
22 Projecting how the atti- tudes of others...	10.35	16.00	50.0	50%
23 Projecting how others have never experienced...	5.35	10.30	30.0	33%

*Significant at or beyond the .05 level.

***Significant at or beyond the .01 level.

Table 20

3. Comparison of Communication Strategies on the Foreign-L1 Inventory of Cognitive Communication Strategies (FICS) Used by Language-Deprived (LD) and Language-Normal (LN) Groups Matched for Utterance Length

COMMUNICATIVE STRATEGIES	LANGUAGE-DEPRIVED (N = 30) Mean Rank	LANGUAGE-NORMAL (N = 30) Mean Rank	MAN-UNITARY U-STAT	P
<u>NEGOTIATION</u>				
1. Labeling	16.87	18.15	18.5	.885
2. Referring to object	11.30	7.30	13.5	.158
3. Referring to individuals	10.50	10.50	12.5	.705
4. Referring to the sequence of events	11.30	8.30	16.5	.121
5. Making comparisons	11.30	7.30	15.5	.171
6. Formulating related questions	7.50	12.30	17.5	.151
7. Formulating or negotiating the initial meaning	10.50	10.10	16.5	.758
8. Referring to the meaning of individuals	11.80	8.00	15.5	.002*
<u>LOGICAL RELATIONSHIP</u>				
9. Establishing a process	11.80	8.30	16.5	.181
10. Negotiating causal and dependent relationships	10.10	10.30	16.5	.875
11. Negotiating problems and solutions	10.80	11.00	16.5	.817
12. Justifying judgments and actions	11.15	8.30	16.5	.445
13. Referring to events and drawing inferences	8.30	11.70	16.5	.851
14. Negotiating predictions	8.10	10.50	17.5	.151
<u>PROBLEM SOLVING</u>				
15. Anticipating/recognizing	12.30	8.30	16.5	.631
16. Anticipating the object of events	11.40	3.40	11.5	.012*
17. Anticipating a sequence of events	10.80	8.50	16.5	.811
18. Anticipating problems and possible solutions	10.00	11.00	16.5	.317
19. Anticipating and negotiating alternative means of solving	14.00	8.30	16.5	.001**
20. Predicting the consequences of actions or events	12.30	8.30	16.5	.158

Table 20 (continued)

COMMUNICATION SITUATIONS	LANGUAGE- LEARNERS (N = 10) Mean Rank	LANGUAGE- NATIVE (N = 10) Mean Rank	MEAN DIFFERENCE	Z
PROJECTION				
25. Projecting how the experiences of others	2.33	11.25	35.2	***
26. Projecting what the feelings of others	19.45	19.00	50.0	***
27. Projecting with reactions of others	14.20	8.20	14.0	***
28. Projecting with situations with experienced	13.25	7.25	20.0	***

***Significant at or beyond the .05 level

***Significant at or beyond the .01 level

used significantly more of these strategies during the language sample task than did the LI group.

A similar analysis was performed on the data generated by the LI and L2 groups for the 24 individual communication strategies or PFCs. The mean score ranks and t -tests, corrected for ties, are shown in Table 16. Results of the analysis revealed a statistical significance between the two groups for strategy 8, Reflecting on the Meaning of Experiences ($\bar{Q} = 15.5$, $p = .05$), strategy 15, Anticipating and Reappraising Alternative Courses of Action ($\bar{Q} = 14.5$, $p = .0002$), strategy 16, Predicting the Consequences of Actions or Events ($\bar{Q} = 15.5$, $p = .0002$), strategy 21, Projecting into the Realities of Others ($\bar{Q} = 12.5$, $p = .0002$), and strategy 25, Projecting into Situations Better Experienced by Others ($\bar{Q} = 13.5$, $p = .0002$). On each of the two Predicting strategies (15, 16), the two Projecting strategies (21, 25), and the Reappraising strategy (8), the LI group used significantly more examples than did the L2 group who were matched on the basis of utterance length.

To test hypotheses 1.3 to 1.14 and 2.7 to 2.16, the data were regrouped into lower-level and higher-level cognitive communication strategies. For the Reporting and Projecting uses, the number of strategies contained in each was divided by four and those which appeared in the first quartile were designated lower-level strategies, and those which appeared in the fourth quartile were designated higher-level strategies. For the Imaginal Reporting and Predicting uses, the number of strategies in each set was divided by three and those strategies below the first quartile were labeled lower-level strategies; those above the 87th quartile were labeled higher-level strategies. In overall score for lower-level strategies (LaPFCs) was computed by

summing the internal scores achieved on all strategies designated lower-level, and an overall score for higher-level strategies (HINDEX) was composed by summing the internal scores achieved on all strategies designated higher-level. Tables 21-28 show the internal scores for lower- and higher-level strategies on FIGS achieved by the LI, LII and LIII groups. These data were also subjected to a two-way ANOVA to make a between-subjects comparison. Results of this analysis are presented in Tables 27 and 28, and reveal no statistically significant differences between groups for lower-level strategies. Both LI and LII, and LI and LIII used comparable numbers of lower-level strategies during allocation of the language sample. Therefore, H₀'s 1-3 to 1-11, and 2-1 to 2-11 were not rejected. In contrast, differences of statistical significance were obtained between LI and LII, and LI and LIII for the use of higher-level strategies. As shown in Table 23, LI and LII performed to a significantly different mean on HINDEX overall ($\bar{Q} = 24.3$, $\bar{g} = .0533$, H₀ rejecting $\bar{Q} = 24.5$, $\bar{g} = .0583$, and H₀ logical reasoning $\bar{Q} = 12.0$, $\bar{g} = .0533$). In each category, LII used significantly more higher-level strategies than did their language-impaired peers. Similarly, Table 24 shows a significant difference in performance between LI and LIII on HINDEX overall ($\bar{Q} = 21.4$, $\bar{g} = .0273$, H₀ Preferring $\bar{Q} = 21.5$, $\bar{g} = .0281$), and H₀ Projecting $\bar{Q} = 22.5$, $\bar{g} = .0213$). Interestingly, the language-impaired group used more higher-level strategies overall, and in particular, Preferring and Projecting strategies. These findings resulted in the rejection of subhypotheses 1-10-1-14, 1-12, 2-15 and 2-16, and the acceptance of 1-15, 1-16, 2-11 and 2-14.

In a post hoc analysis, a series of ANOVAs for repeated measures was performed to determine if significant differences existed between

Table 20

Interval Scores for Lower-Level Strategies on the (Function) Inventory of Explicit Strategy Use Strategies (FIEES) Administered by the Language-Impaired (LI) Group

SUBJECT	LOWER-LEVEL STRATEGIES				OVERALL
	REPORTING	LOCATING, REASONING	PREDICTING	PARAPHRASING	
1	13	0	11	4	28
2	16	1	13	4	34
3	13	0	11	8	32
4	3	3	3	0	20
5	3	1	27	8	39
6	8	2	4	3	17
7	18	1	26	5	50
8	16	0	13	3	32
9	13	0	13	4	30
10	7	8	14	0	29
Mode	3-13	0-3	4-27	0-8	17-37
Mean	10.1	0.2	11.4	1.8	23.5
Median	13.0	0.5	11.8	3.0	26.3

Table 22

Mean and Scores for Higher-Level Strategies in the Functional
Inventory of Cognitive Communication Strategies (FICS)
Administered by the Language-Impaired (LI) Group

SUBJECT	REPORTING	FUNCTIONAL STRATEGIES			OVERALL
		LOOKING REASONING	PROBLEM SOLVING	PROBLEM SOLVING	
1	3	0	0	1	3
2	3	0	4	3	10
3	3	2	3	3	9
4	6	2	3	3	12
5	4	1	3	3	8
6	2	0	1	0	3
7	7	1	3	3	11
8	2	1	4	2	9
9	1	0	3	3	3
10	3	1	2	3	10
MEAN	3.7	0.9	0.4	0.6	2.1
MODE	3-4	0-0	1-3	1-3	3-1
RELIANCE	1-0	1-0	1-0	1-3	0-0

TABLE 23

Interval Scores for Lower-Level Strategies in the Functional Inventory
of Cognitive Communication Strategies (FICCS) Administered by the
Language-Matrix (LM) Group Matched for Chronological Age

SUBJECT	REPORTING	LOWER-LEVEL STRATEGIES			OVERALL
		LOGICAL REASONING	PREDICTING	PROTECTING	
11	12	1	10	3	14
12	14	0	10	4	14
13	11	0	7	1	14
14	5	1	10	5	12
15	4	0	10	4	12
16	3	0	10	5	14
17	13	1	12	4	16
18	11	1	5	1	12
19	11	0	12	4	16
20	2	4	14	5	24
RANGE	3-18	0-4	7-14	1-7	12-24
MEAN	10.4	1.2	11.2	3.8	17.1
STANDARD	11.2	1.0	11.2	4.8	14.1

Table 38

Interval Scores for Higher-Level Strategies on the Pennsylvania
Inventory of Cognitive Communication Strategies (PICES)
Administered to the Language-Normal (LN) Group
Revised for Developmental Age

SUBJECT	REPORTING	HIGHER-LEVEL STRATEGIES			OVERALL
		LEARNING REASONING	NEGOTIATING	PROBING/TRYING	
10	4	0	1	1	2
12	2	1	0	1	2
13	8	6	4	3	15
14	3	3	1	0	5
15	4	4	3	4	15
16	6	4	2	2	14
17	8	3	4	1	16
18	0	3	3	1	7
19	3	4	1	1	9
20	4	2	4	3	13
RANGE	2-8	0-7	0-4	1-3	0-22
MEAN	3.4	3.3	2.7	2.0	10.4
MODIAN	3-5	3-4	2-3	2-2	10.5

Table 25

Interval Scores for Lower-Level Strategies on the Functional Inventory of Cognitive Communication Strategies (FICCS) Achieved by the Language-Mixed (LMI) Group Measured for Moroccan Arabic

SUBJECT	REPORTING	LOWER-LEVEL STRATEGIES			OVERALL
		LOOKING REASONING	PRESENTING	NEGOTIATING	
21	5	0	10	3	12
22	7	1	8	0	14
23	13	0	10	5	28
24	8	0	5	4	21
25	7	3	10	3	23
26	16	0	12	3	31
27	16	0	12	5	33
28	18	0	7	8	33
29	23	0	10	2	35
30	15	0	12	7	34
SUM	5-23	0-3	3-12	0-5	10-37
MEAN	11.7	0.3	10.0	4.1	26.1
median	10.5	0	10.0	4.0	24.5

Table 28

Percent Scores for Higher-Level Strategies on the Functional Inventory of Cognitive Communication Strategies (FICS) Administered by the Language-Bornal (LBC) Group Method for Distance Learning

SUBJECT	HIGHER-LEVEL STRATEGIES				OVERALL
	REPORTING	LOGICAL RELATING	FOCUSING	PROBLEMSOLVING	
21	1	0	1	0	2
22	0	2	0	0	2
23	3	1	0	1	5
24	1	1	0	1	3
25	3	3	0	1	7
26	2	1	1	0	4
27	0	1	0	0	1
28	2	2	0	0	4
29	0	0	0	0	0
30	0	1	0	1	2
MEAN	0.4	0.3	0.1	0.1	0.7
SD	1.0	1.2	0.3	0.7	1.0
MEAN SD	2.0	1.0	0.0	1.0	3.0

Table 23

A Comparison of Lower- and Higher-Level Strategies on the Functional Inventory of Cognitive Linguistics Strategies (FLICS) Used by Language-Impaired (LI) and Language-Normal (LN) Groups Matched for Chronological Age

FLICS STRATEGIES	LANGUAGE- IMPAIRED (N = 10) Mean Rank	LANGUAGE- NORMAL (N = 10) Mean Rank	PAIR- WISKEY Z-Test ^a	p
OVERALL TOTAL	10.80	10.10	46.0	.790
LE REPORTING	5.50	11.50	40.0	.000
LE LOGICAL REASONING	11.25	9.00	30.0	.011
LE PREDICTING	10.00	11.00	45.0	.761
LE PROJECTING	11.00	9.10	38.0	.004
RE TOTAL	13.00	7.00	38.5	.000 ^b
RE REPORTING	13.00	7.00	38.5	.000 ^b
RE LOGICAL REASONING	16.50	6.70	16.0	.000 ^{b,c}
RE PREDICTING	11.00	9.00	40.0	.586
RE PROJECTING	11.00	9.25	40.5	.000

^aSignificant at or beyond .05.

^bSignificant at or beyond .01.

Table 28

A Comparison of Lower- and Higher-Level Strategies on the Functional Inventory of Cognitive Communication Strategies (FICS) Based
by Language-Immersion (LI) and Language-Manual (LM)
Groups Matched For Verbal Length

H/L/L STRATEGIES	LANGUAGE- IMMERSION (N = 10) Mean Rank	LANGUAGE- MANUAL (N = 10) Mean Rank	MAN- UALLY U-TEST	Z
LO FICS OVERALL	10.40	9.50	44.0	.648
LO REPORTING	10.30	10.10	46.0	.90
LO LOGICAL REASONING	11.30	9.40	36.0	.710
LO PROBLEM	10.60	8.80	39.0	.694
LO PROTECTING	9.20	11.70	37.0	.330
HI FICS OVERALL	10.40	7.60	31.0	.020*
HI REPORTING	10.70	8.20	37.0	.040
HI LOGICAL REASONING	9.30	11.70	38.0	.334
HI PROBLEM	10.30	6.40	9.0	.001**
HI PROTECTING	11.70	7.70	24.0	.021*

*Significant at or beyond .05.

**Significant at or beyond .01.

the use of lower- and higher-level strategies by subject groups LI, LRI, and LRI. Overall differences as well as differences within the major use categories of Reporting, Logical Reasoning, Problem Solving, and Problem Solving were evaluated. All three groups used significantly more overall lower-level strategies than higher-level strategies with results as follows: LI ($\chi^2 = 96.191$, $df = 1/3$, $p = .001$), LRI ($\chi^2 = 38.819$, $df = 1/3$, $p = .00003$), and LRI ($\chi^2 = 74.738$, $df = 1/3$, $p = .004$).

When the overall functional language score was divided into subcategory scores of language use, the three groups maintained their differential use of lower versus higher-level strategies for the Reporting and Problem Solving uses, yielding the following results for the LI group:

Reporting ($\chi^2 = 3.1403$, $df = 1/3$, $p = .081$) and Problem Solving ($\chi^2 = 96.813$, $df = 1/3$, $p = .00003$), the LRI group: Reporting ($\chi^2 = 30.333$, $df = 1/3$, $p = .001$) and Problem Solving ($\chi^2 = 34.383$, $df = 1/3$, $p = .00000$), and the LRI group: Reporting ($\chi^2 = 18.819$, $df = 1/3$, $p = .001$) and Problem Solving ($\chi^2 = 406.388$, $df = 1/3$, $p = .00000$). Two of the groups used significantly greater numbers of lower-level Problem Solving strategies than higher.

The results of ANOVA analysis yielded the following: LRI ($\chi^2 = 3.044$, $df = 1/3$, $p = .081$) and LRI ($\chi^2 = 14.378$, $df = 1/3$, $p = .004$). Finally, both language-normal groups used significantly more higher- than lower-level Logical Reasoning strategies: LRI ($\chi^2 = 18.819$, $df = 1/3$, $p = .001$) and LRI ($\chi^2 = 23.158$, $df = 1/3$, $p = .001$).

A summary of these findings appears in Tables 24 through 28 at the conclusion of this chapter.

Language Used by Language-Normal Child
Index of Differential Age and
Socioeconomic Levels

To test subhypotheses 3.1 to 3.4, and 5.1 to 5.3, performance on PIDS of language-normal children at two different ages, 4 years (plus or minus 3 months) and 7 years (plus or minus 3 months), and two socioeconomic levels, lower and higher was compared. Interval scores, computed for the overall Functional language score and the subscores of Reporting, Lexical Repeating, Preferring, and Projecting, are shown in Tables 19-22 for each subject group. These data were analyzed using a two-way analysis of variance (ANOVA) to determine the significance of the two main effects, age and socioeconomic level, as well as their two-way interaction. Summaries of the ANOVAs for language use parameters are found in Table 23. The two main effects of age and socioeconomic level were not found to be significant for the PIDS overall Functional language score and the subscores of Reporting, Lexical Repeating and Preferring, nor was the two-way interaction of age x socioeconomic level. A significant main effect for age ($F_1 = 3.443$, $df = 1/16$, $p = .00$) was obtained for the Projecting subscore but the main effect for socioeconomic level and the interaction effect were not statistically significant. The language-normal 4-year-olds used significantly more Projecting utterances in response to the High Picture Set (see Table 20) than the 7-year-olds. These findings resulted in the acceptance of subhypotheses 3.1 to 3.4, and 5.1 to 5.3, and the rejection of subhypothesis 3.5.

To examine differences in the use of the 14 individual association strategies on PIDS between the language-normal 4- and

Table 25

Internal Scores on the Functional Inventory of Depictive
Communication Strategies (FIDCS) Achieved by
Language Level A-Band-214s

SUBJECT	ACTUALLY	PREDICTED			OVERALL
		LOW-LEVEL SCORING	INTERMEDIATE	HIGH-LEVEL	
10	20	7	14	19	20
18	30	11	11	28	23
13	40	19	18	38	28
14	10	14	24	20	24
15	20	12	26	18	24
24	20	20	20	24	24
28	20	16	16	20	22
29	15	8	19	15	21
34	31	12	19	19	23
38	24	18	18	17	24
RANGE	10-41	7-28	11-28	19-38	20-28
MEAN	23.1	13.3	18.3	23.2	24.0
STANDARD DEVIATION	25.5	12	14.3	19	20

Table 3B

Percent Scored in the National Inventory of English
Communication Strategies (NICS) Achieved by
Language-Bornal 2 Year-Olds

SUBJECT	REPORTAGE	NICS			OVERALL
		RECOGNIZING	PRODUCING	PRODUCING	
14	22	18	15	14	73
17	34	13	21	12	89
18	28	14	16	14	74
19	14	14	14	18	74
20	37	22	28	22	104
34	19	12	17	12	48
37	10	13	14	14	44
38	30	18	22	19	77
39	24	13	12	17	44
48	22	11	9	13	34
RANGE	19-34	11-22	9-28	12-22	34-104
MEAN	24.7	13.2	17.7	14.4	76
MEDIAN	25.5	14.5	18	14.5	73.5

Table 31

Interval Scores on the Functional Inventory of Cognitive Communication Strategies (FICCS) Administered by LBS Language-Normal (LBS) 6- and 7-Year-Olds

SUBJECT	REPORTING	FICCS			OVERALL
		LOGICAL REASONING	PROBLEM- SOLVING	ADAPTIVE	
11	31	7	14	12	21
12	31	11	11	26	24
13	41	15	16	18	28
14	16	14	11	26	24
15	32	12	16	18	24
16	12	15	15	18	23
17	16	11	21	15	25
18	38	15	16	14	24
19	24	16	16	18	24
20	32	23	18	22	34
MEAN	26-41	7-23	11-26	14-26	24-34
SD	16	13.8	14.2	13.4	18
MINIMUM	20-31	14	14	13.5	21.5

LBS = lower functional communication status

Table 50

Interval Scores on the Functional Inventory of Cognitive Communication Strategies (FICCS) Administered by ECLS Language-Minority (LM) 6- and 7-Year-Olds

SUBJECT	REPERITUAL	FICCS			OVERALL
		LOCATING, RECOGNIZING	PRODUCING	PRODUCING UNDERSTANDING	
18	37	30	23	24	104
19	33	44	44	23	83
20	19	8	13	15	54
24	20	12	13	19	64
25	24	18	15	17	74
26	19	43	17	31	60
27	30	17	18	18	63
38	30	49	25	19	90
39	26	13	42	17	68
40	19	11	9	13	52
<hr/>					
RANGE	19-37	8-49	9-45	13-31	51-104
MEAN	26.8	14.4	18.3	17.3	72.9
STANDARD	12.3	14.3	14.3	17	44.3

NOTE = Higher scores indicate better status.

Table 53

Summaries of Two-Way ANOVAS for the Overall and Subcategory Scores on the Functional Inventory of Cognitive Competencies
 Synthesizing OFCSCS Administered by Lower SES and Higher
 SES Socioeconomic Status Subgroups—Normal
 6- and 7-Year-Olds

BY (ALL) F1000	df	SS	MS	F	p
Main Effects	3	115.500	38.500	344	.000
Status	1	105.500	105.500	944	.000
Age	1	7.500	7.500	.644	.518
Interaction of Status x Age	1	20.500	20.500	1.848	.171
Explained	3	115.500	38.500		
Residual	16	588.354	36.772		
Total	19	1024.354			

SCOP1000	df	SS	MS	F	p
Main Effects	3	85.500	28.500	288	.000
Status	1	84.500	84.500	1.884	.178
Age	1	1.000	1.000	.010	.920
Interaction of Status x Age	1	10.000	10.000	.334	.570
Explained	3	85.500	28.500		
Residual	16	588.354	36.772		
Total	19	1024.354			

COG1000 Reasoning	df	SS	MS	F	p
Main Effects	3	30.500	10.168	1.213	.313
Status	1	4.800	4.800	.560	.591
Age	1	26.500	26.500	3.174	.078
Interaction of Status x Age	1	10.000	10.000	1.210	.273
Explained	3	30.500	10.168		
Residual	16	214.500	13.406		
Total	19	265.000			

Table 15 (continued)

REGRESSION	df	SS	MS	F	p
Main Effects	3	34.740	11.580	.000	.949
Status	1	.400	.400	.016	.983
Age	1	34.340	34.340	1,447	.000
Interaction of Status x Age	1	34.340	34.340	1,447	.000
Explained	3	64.000	21.333		.949
Residual	16	455.910	28.494		
Total	19	554.950	29.208		

REGRESSION	df	SS	MS	F	p
Main Effects	3	80.000	26.667	1.404	.000+
Status	1	8.400	8.400	1.018	.367
Age	1	42.000	42.000	5.640	.000+
Interaction of Status x Age	1	11.600	11.600	1.018	.367
Explained	3	41.750	13.917		.000
Residual	16	394.500	24.656		
Total	19	436.250	22.961		

3-year-olds, a Raschlinging Q-test was applied to the data generated by the groups and the results are reported in Table 26. Three strategies, strategy 3, Referring to Incidents ($Q = 13.5$, $p = .045$), strategy 7, Extracting and Manipulating Central Features ($Q = 15.6$, $p = .021$), and strategy 12, Referring to the Functions of Objects ($Q = 15.4$, $p = .046$), differentiated between the groups to a statistically significant degree. The 4-year-old group produced more examples of strategies 3 and 12, whereas the 3-year-old group produced greater numbers of strategy 7.

A cluster analysis was performed on the interval scores achieved by the lower and higher socioeconomic groups. Results of the four-cluster Q-test, shown in Table 28, yielded a significant difference between the two groups in the use of only one strategy, strategy 3, Explaining a Process ($Q = 15.6$, $p = .044$). The higher socioeconomic group used a significantly greater number of this strategy type than did the lower socioeconomic group.

To test subhypotheses 3.7 to 3.10, and 4.7 to 4.10, the data were regrouped into lower-level and higher-level cognitive communication strategies. Tables 34-35 show the interval scores for lower- and higher-level strategies as FIQS for the 4- and 3-year-old language-level groups. According to the data in Table 34, the 4- and 3-year-old groups used comparable numbers of lower- and higher-level strategies as FIQS. Thus there were no significant differences between the groups in the use of these strategies, subhypotheses 3.7 to 3.10 were not rejected. Tables 36-37 show the interval scores for lower- and higher-level strategies as FIQS achieved by the lower and higher socioeconomic groups. With this regrouping, there were no significant differences evidenced between the groups. The mean ranks and

Table 2A

A Comparison of Communication Strategies on the Functional Inventory of English Communication Strategies (FACES) Used by Experimental 0- and 2-year-olds

COMMUNICATION STRATEGY	LANGUAGE- IMPAIRED 0-2-YEAR-OLDS (N = 10) Mean Rank	LANGUAGE- NORMAL 2-12-YEAR-OLDS (N = 10) Mean Rank	MAN- CONTROL 0-2-YEAR- OLD	Z
REPORTING				
1. Labeling	12.30	8.50	24.0	.001
2. Referring to detail	9.80	11.40	28.0	.040
3. Referring to incidents	10.20	7.40	18.0	.014*
4. Referring to the sequence of events	16.30	16.20	48.0	.001
5. Making comparisons	10.10	10.80	16.0	.190
6. Describing related aspects	8.20	11.70	18.0	.001
7. Extracting or recapitulating the central meaning	8.40	11.80	18.0	.002*
8. Referring to the meaning of ascriptions	10.40	16.00	45.0	.001
LOGICAL REASONING				
9. Explaining a process	9.40	14.00	20.0	.040
10. Describing causal and dependent relationships	11.00	9.40	20.0	.126
11. Describing problems and solutions	9.20	11.80	22.0	.014
12. Justifying judgments and actions	9.10	11.60	26.0	.016
13. Reflecting on events and drawing conclusions	8.80	12.60	26.0	.036
14. Describing principles	8.60	10.40	21.0	.036
PREDICTING				
15. Anticipating the meaning	11.20	9.10	26.0	.001
16. Anticipating the detail of events	8.40	10.20	15.0	.001
17. Anticipating a sequence of events	8.80	11.10	18.0	.010
18. Anticipating problems and possible solutions	9.10	11.40	16.0	.010

Table 3b (continued)

COMMUNICATIVE STRATEGIES	LANGUAGE- NORMAL 4-YEAR-OLDS (N = 10) Mean Rank	LANGUAGE- IMPAIRED 3-YEAR-OLDS (N = 10) Mean Rank	NON- IMPAIRED 3-YEAR-OLDS	Z
19. Anticipating and recognizing alternative courses of action	8.30	11.80	22.4	.045
20. Predicting the consequences of actions or events	10.10	10.80	44.3	.781
PREDICTING				
21. Projecting into the experiences of others	11.40	8.50	36.2	.110
22. Projecting into the feelings of others	9.50	10.50	40.4	.455
23. Projecting into the reactions of others	13.40	2.40	21.4	.000*
24. Projecting into situations never experienced	12.10	8.40	23.5	.754

*Significant at or beyond the .05 level.

Table 35

A Comparison of Communication Strategies on the Functional Inventory of Cognitive Communication Strategies (FICCS) Used by the Lower (LMS) and Higher (HMS) Socioeconomic Language-Minority Groups

COMMUNICATION STRATEGIES	LMS LANGUAGE-MINORITY (N = 10) Mean Rank	HMS LANGUAGE-MINORITY (N = 10) Mean Rank	NON-MINORITY Percent	Z
REPORTING				
1. Labeling	8.40	11.40	25.0	1.85
2. Referring to details	8.40	11.20	25.0	.247
3. Referring to incidents	11.70	9.40	45.0	.440
4. Referring to the sequence of events	10.30	12.40	45.0	.608
5. Making comparisons	10.30	10.20	45.0	.910
6. Describing related aspects	10.70	12.80	45.0	.780
7. Referring to reorganizing the central message	9.60	11.40	41.0	.405
8. Referring to the timing of experience	9.20	11.20	35.0	-.151
LOGICAL REASONING				
9. Explaining a process	14.30	8.20	25.0	2.444
10. Recognizing causal and dependent relationships	10.40	10.40	45.0	.944
11. Recognizing problems and solutions	11.10	9.80	45.0	.563
12. Justifying judgments and actions	14.30	10.20	45.0	.703
13. Referring to events and drawing similar ones	10.20	10.80	45.0	.787
14. Recognizing principles	11.20	9.30	45.0	.664
PREDICTIONS				
15. Anticipating/Forecasting	9.40	11.20	25.0	.443
16. Anticipating the detail of events	10.60	10.40	45.0	.358
17. Anticipating a sequence of events	11.20	9.40	41.0	.568
18. Anticipating problems and possible solutions	11.00	10.00	35.0	.181

Table 18 (continued)

COMMUNICATION STRATEGIES	LOW- LANGUAGE- GROUP (N = 12) Mean Score	HIGH- LANGUAGE- GROUP (N = 18) Mean Score	Mean- MIDTAP t-test	p
13. Anticipating and recognizing alternative courses of action	9.33	11.33	12.5	.005
14. Predicting the consequences of actions or events	10.25	12.17	15.5	.000
PROJECTING				
15. Projecting into the experiences of others	9.33	11.28	14.5	.000
16. Projecting into the feelings of others	8.50	12.44	15.5	.000
17. Projecting into the reactions of others	10.25	12.50	16.5	.000
18. Projecting into situations never experienced	12.83	14.33	17.5	.000

*Significant at or beyond the .05 level.

Table 38

MEANED SCORES FOR LOWER-LEVEL STRATEGIES ON THE PARALLELITY INVENTORY
OF COGNITIVE APPROPRIATION SCORING KEY (PICT) Administered
by the Language-Matched 9-Year-Olds

SUBJECT	NONREPLACING	LOWER-LEVEL STRATEGIES			OVERALL
		LOG BLANK REPLACING	PREDICTING	PROJECTING	
11	16	9	18	7	15
12	14	8	18	6	15
13	11	8	7	1	14
14	5	9	18	5	15
15	4	8	18	4	15
16	14	6	17	7	15
17	10	6	8	6	14
18	4	1	12	4	11
19	5	2	18	3	12
20	14	5	11	3	12
RANGE	4-16	0-9	7-18	1-7	11-15
MEAN	9.8	5.1	11.5	4.2	12.1
MEDEV	14.5	1.3	11.5	4.4	15.0

Table 50

Internal Sources for Higher-Level Strategies in the Functional
 Proficiency of Depictive Communication Strategies (FPGC)
 Achieved by the Language-Minor B-Tech-200s

SUBJECT	NOMINATIVE	HIGHER-LEVEL STRATEGIES			OVERALL
		USING CAUSE, REASONING	PREDICTING	PROJECTING	
11	4	0	1	1	6
12	3	1	0	1	5
13	4	4	4	3	15
14	3	3	1	0	7
15	4	4	3	4	15
16	3	0	4	3	10
17	2	1	3	0	6
18	1	0	0	4	5
19	3	0	0	3	6
20	3	4	4	1	12
SAMPLE	1-20	0-6	0-4	1-4	3-15
MEAN	4.4	1.5	1.0	2.4	11.3
MEDIAN	4.5	1.5	1.0	2.5	10.5

Table 28

Interval Scores for Lower-Level Strategies on the Functional Inventory of Cognitive Communication Strategies (FICCS) Administered by the Language-Based Program

SUBJECT	LOWER-LEVEL STRATEGIES				OVERALL
	REPARING	LOGICAL REASONING	PREDICTING	PRODUCTION	
16	3	3	10	3	24
17	13	1	12	4	30
18	10	1	3	1	25
19	11	0	12	4	28
20	5	4	16	3	28
24	5	1	10	2	18
27	4	8	5	3	14
28	5	1	14	8	28
29	8	3	3	5	19
30	7	3	3	3	16
total	4-13	0-4	3-16	0-5	14-34
mean	6.4	1.4	10.7	3.0	23.9
median	5.0	1.3	10.0	3.0	20.0

Table 38

Internal Scores for Higher-Level Strategies on the Functional Inventory of Cognitive Compensation Strategies (FICCS) Administered by the Language-Behavior 2-Year Study

SUBJECT	REPORTING	HIGHER-LEVEL STRATEGIES			OVERALL
		INITIAL RESPONSE	PREDICTING	PROTECTING	
16	6	4	3	2	14
17	8	3	4	1	16
18	8	3	3	0	14
19	7	4	1	2	9
20	4	3	4	3	14
24	4	3	4	3	14
27	7	4	3	0	14
28	5	3	12	3	22
29	5	4	1	4	8
40	3	1	2	1	5
<hr/>					
RANGE	2-8	1-4	0-12	0-3	5-22
MEAN	5.4	4.0	3.8	1.7	14.9
STANDARD	2.3	1.5	3.8	1.8	14.9

Table 3b

A Comparison of Lower- and Higher-Level Strategies on the Functional Inventory of Cognitive Remediation Strategies (FICRS) Test by Language-Random 6- and 7-Year-olds

COGN STRATEGIES	LANGUAGE- RANDOM 6-YEAR-OLDS (N = 102) Mean Rank	LANGUAGE- RANDOM 7-YEAR-OLDS (N = 102) Mean Rank	WILCOX SIGN TEST Statistic	p-Value
LR FICRS OVERALL	11.80	9.40	37.0	.001
LR REPORTING	11.40	9.40	41.0	.000
LR LOGICAL REASONING	11.00	10.00	45.0	.000
LR PRODUCTION	11.00	10.40	46.0	.000
LR PRODUCTION	10.80	8.00	50.0	.000
HR FICRS OVERALL	8.50	10.90	39.0	.000
HR REPORTING	9.00	11.00	33.0	.001
HR LOGICAL REASONING	8.10	10.10	27.0	.005
HR PRODUCTION	9.00	13.00	31.0	.000
HR PRODUCTION	10.10	8.00	31.0	.000

Table 8

Internal Scores for Lower-Level Strategies on the Functional Inventory
of Cognitive Communication Strategies (FICCS) Achieved
by Lower Socioeconomic Status (LES) Language-Born Is

SUBJECT	REPORTING	LOWER-LEVEL STRATEGIES			OVERALL
		LISTENING	PRODUCTION	PRODUCTION	
11	15	1	10	7	21
12	16	0	10	4	20
13	11	3	7	8	24
14	9	1	13	3	21
15	6	0	13	4	21
16	9	3	10	1	26
17	13	1	13	4	26
18	11	1	8	1	22
19	11	0	13	4	28
20	9	4	16	5	29
MEAN	9-16	0-3	7-16	1-7	22-34
SD	10-6	1-3	11-3	3-8	22-1
MEAN	11-0	1-0	11-0	4-0	26-0

LES = Lower Socioeconomic Status

Table 40

Mean Scores for Higher-Level Strategies on the Functional Domains of Cognitive Communication Strategies (FICS) Administered by Lower Socioeconomic Status (SES) Language Learners

SUBJECT	HIGHER-LEVEL STRATEGIES				OVERALL
	REPRESENTING	LOGICAL REASONING	PREDICTING	PROBLEM SOLVING	
11	4	0	1	1	6
12	3	1	0	1	7
13	0	4	4	3	11
14	3	3	1	2	9
15	4	4	3	4	15
16	4	4	2	2	14
17	0	3	0	1	10
18	0	3	3	1	15
19	2	4	1	2	9
20	4	3	0	3	10
Mean	2.0	2.2	0.6	1.4	6.2
SD	0.4	1.3	0.3	1.0	1.0
Median	0.0	1.0	0.0	1.0	1.0

SES = Lower Socioeconomic Status

Table 43

Interval Scores for Lower-Level Strategies on the Functional Inventory of Cognitive Communication Strategies (FICCS) Administered by Higher Socioeconomic Status (HSES) Language Learners

SUBJECT	LOWER-LEVEL STRATEGIES				OVERALL
	REPORTING	CONCRETE REACHING	PREDICTING	PROJECTING	
21	14	4	12	2	42
22	10	4	8	4	26
23	6	0	10	4	20
24	5	8	10	3	26
25	10	3	10	3	26
26	5	0	10	8	23
27	4	8	5	3	20
28	5	0	14	8	27
29	8	8	3	5	24
30	7	8	3	3	21
SUM	114	44	117	67	342
MEAN	3.4	1.3	3.5	2.1	2.6
MEDEV	2.5	1.0	2.5	1.8	2.0

HSES = Higher Socioeconomic Status

Table 99

INTEGRATED SCORES FOR HIGHER-LEVEL STRATEGIES ON THE
FUNCTIONALInventory of Angeline Communication
Strategies (FIDCAS) Administered by Higher Academic
Language (HIAL) Language-Bornals

SUBJECT	REPORTING NO.	HIGHER-LEVEL STRATEGIES			
		FORMAL READING	PRODUCTION	FLUENCY	OVERALL
31	5	4	4	5	10
32	3	1	5	1	10
33	1	4	4	4	6
34	5	2	4	5	10
35	3	4	4	1	11
36	4	5	4	5	14
37	3	4	5	1	12
38	5	7	10	5	17
39	5	2	1	4	4
40	3	1	4	1	5
MEAN	1-7	4-7	6-11	4-4	9-17
SD	4.4	1.1	1.1	1.1	12.1
MEAN	5-6	1.5	1-2	1.5	12.2

HIAL = Higher Academic Language-Bornals

Kruskal-Wallis H -tests reported in Table 48 between the lower and higher socioeconomic (impoverished) groups revealed a significant difference for the sorting strategies $H_2 = 34.8$, $p < .001$, with the lower socioeconomic group using greater numbers of this type of strategy. In the tests of these data, subhypothesis 4.5 was rejected, subhypothesis 4.3, and 4.5 to 4.14 were accepted. Tables 49-51, at the conclusion of this chapter, present a summary of these findings.

Correlation and Regression Analysis

To test hypotheses 5, 4 and 7, performance on PICT was correlated with performance on standardized measures of language content and/or form, nonstandardized measures of language form, and measures of academic achievement. The predictive value of these three types of measures in estimating performance on a measure of language use, PICT, was also explored.

Language Use and Standardized Measures of Language Form: The ACTFL Test

To test hypothesis 5, the relationship between performance on the Test of Language Acquisition (TLA) (Davies & Smith, 1971), the Test of Auditory Comprehension of Language (TACL) (Carrow, 1970), the Carrow Elicitated Language Inventory (CELI) (Carrow, 1970) and PICT was analyzed for all subjects using a Pearson product-moment correlation (r). The raw performance data for each subject on the criterion measure and each of the predictor measures is included in Appendix 8 and the intercorrelations among the four measures is presented in Table 49. As is seen, there is a marked degree of collinearity among the

Table 4b

A Comparison of Lower- and Higher-Level Strategies on the Functional Inventory of Cognitive Compensation Strategies (FICCS) Used by the Lower (LSES) and Higher (HSES) Socioeconomic Groups

ICCS STRATEGIES	LSES LANGUAGE- NORMAL (n = 30) Mean Rank	HSES LANGUAGE- NORMAL (n = 30) Mean Rank	MAN- WITNEY U-TEST	Z
G1 PACE OVERALL	12.30	8.30	28.0	.000
G1 REPERTOIR	14.0	8.00	25.0	.000*
G1 LITERAL REASONING	8.50	11.00	30.0	.118
G1 PREDICTIVE	11.15	5.85	40.0	.000
G1 PROJECTIVE	11.30	5.30	38.0	.000
G2 PACE OVERALL	10.00	10.00	40.0	.730
G2 REPERTOIR	11.00	5.00	32.0	.000
G2 LITERAL REASONING	10.40	10.60	40.0	.930
G2 PREDICTIVE	10.40	10.30	40.0	.900
G2 PROJECTIVE	10.20	10.80	42.0	.810

*Significant at or beyond the .05 level.

LSES = Lower Socioeconomic Status

HSES = Higher Socioeconomic Status

Table 44
Correlations among Three Standardized Linguistic
Measures and the Functional Inventory of
Cognitive Communication Strategies
(FICCS) for EFL Students

	FICCS	TAFL	TELS	CELI
FICCS	1.00**	.44**	-.30*	-.18
TAFL		1.00**	.80**	-.33*
TELS			1.00**	-.70**
CELI				1.00**

*Significant at or beyond the .05 level.

**Significant at or beyond the .01 level.

TAFL = Test of Academic Competencies of Language.

TELS = Test of Language Skills.

CELI = College English Language Inventory.

variables, $p = .11$ to .76. Table 4F summarizes the relationship between FICO and the three standardized measures of language content under four measures to the obtained correlation coefficients (r), coefficients of determination (r^2), and standard errors (SE). These results indicated that only performance on the TALL [$r(146) = .46$, $p < .001$] was significantly correlated with performance on FICO when a two-tailed test of significance was applied. Although the correlation coefficient and coefficient of determination suggest a moderate degree of positive relationship between TALL and FICO, only 13 percent of the variance in FICO can be predicted from knowledge of the variance in TALL. The amount of standard error between TALL and FICO was .17. This measure indicates the probable extent to which a correlation is apt to vary in future samplings, that is, it provides an indication of reliability, "the degree of stability which any found measure is likely to have when it is derived from a sample drawn from a larger population about which we wish to generalize" (Franklin, 1954, pp. 36-37). Since, by chance alone, this may be expected to vary on future sampling, and since, in 75.8 percent of the cases, the variations may be expected to fall within 45 Standard Error (SE) of the found measure, these limits define the range of the probabilities for the total population. Assume the observed correlations between TALL and FICO are smaller than those shown in the SE, they are not statistically reliable relative to other steps, although they are sufficiently significant to warrant further study. Franklin (1954) encourages follow-up study, using a larger sample, in any correlation which is equal to or exceeds .30, since chance factors are much more likely to be present in small samples. In future sampling, the range of variations due to chance alone would

Table 47

Relationship of Standardized Scores of Language to the
Functional Inventory of Cognitive Communication
Strategies (FICCS) for All Subjects

MEASURES	r	M	SD	r^2	p
FLU	.50	.04	-.12 - .79	.25	ns
Dec.	.44	.03	.00 - .83	.19	.41
ILL	-.16	.03	-.40 - .49	.03	ns

FLU = Test of Language Proficiency

Dec. = Test of Auditory Comprehension of Language

ILL = Index of Invol Language Inventory

provides the following: $r^2 = .05$ to $.83$. This ranges from almost no correlation to a slight or high correlation.

Finally, to determine the predictive value of the independent variables, FAC, WLB, and GLL, in relation to the criterion variable, FICE, the raw performance data were submitted to a stepwise linear multiple regression analysis. A summary of the results of the proper drive is included in Table 4B. Squared up to these data, the regression of FICE on three standardized measures of language content and/or form is statistically significant ($r^2 = 2.553$, $\underline{p} = .0024$, $r^2 < .05$ of the total variance of the FICE scores of 46 children studied, 25 percent is accounted for by a linear combination of the FAC, WLB, and GLL) ($\underline{p} = .44$, $\underline{r}^2 = .20$). Further analysis of the results indicated, however, that only the FAC ($\underline{p} = 0.124$, $\underline{p} = .0724$, $r^2 = .80$ significantly contributed to the prediction of performance on FICE. The other two variables in the equation, WLB and GLL, did not make a statistically significant contribution to the prediction; that is, there was no improvement in the accuracy of estimating performance on FICE with the additional variables. Francis (1955) believes that "the predictive value of the correlation coefficient is almost never put to any practical use to estimate one measure from another" ($p. 83$). Coefficients below .50 do not yield accurate predictions even 25 percent better than chance. To yield a prediction which is 25 percent better than chance, the correlation must be at least .44; to achieve a prediction which is 50 percent better than chance, the correlation must be at least .54; while to be 75 percent better than chance, the coefficient must approach .67. These figures explain why "the requirements for making sound predictions are really too high for ordinary circumstances"

Table 18

Adjusted and R^2 of the Regressions of the Three Standardized Linguistic Accounts on the Fossilized Inventory Captive Communication Strategies (FICCI)

Source	β	β_1	β_2	β_3	β_4	R^2
$R_1 = R_2$	5734	1285.281	124.449	4.553	.05	.157
Residual		7828.503	155.831			
$R_1 = R_3$	5732	1285.583	852.949	4.358	.005	.158
Residual		7851.458	158.345			
R_1	1738	1432.368	1432.368	3.136	.005	.154
Residual		7880.231	157.754			

R_1 = Total of Auditory Comprehension of Language (TACL)

R_2 = Total of Language Strategies (TALS)

R_3 = Captive Fossilized Language Inventory (CFLI)

Univariate, $t(28)$, $p < .05$. The correlation between performance on FDCI and FICCI, and FDCI and FICCI were .56 and .58, respectively. In view of these findings, null subhypotheses 5.1 and 5.2 were rejected, and 5.3 was not.

Language Use and Nonstandardized Measures of Language Form

The relationship between the overall internal score achieved on FICCI and each of eight nonstandardized linguistic measures of form was analyzed for all subjects using the Pearson product-moment correlation (r). The raw performance data for all subjects on *POV's*, *TR*, *MLN*, *TR*, *MLB-R*, *MLB-N*, *SLN* and *SLN* appear in Appendix 1, and the inter-correlations among the measures are presented in Table 65. Again, the results indicated a high degree of multicollinearity among the variables, high intercorrelations of the independent variables, .31 to .58. A summary of the correlational analysis is shown in Table 56, including the correlation coefficients (r) and coefficients of determination (r^2) obtained between FICCI and each of the eight measures of linguistic form, as well as the standard errors (SE). These data revealed statistically significant, positive correlations between FICCI and all of the nonstandard linguistic measures when a corrected test of significance was applied. The highest correlation was obtained between FICCI and *POV's* [r (.58) = .56, $p < .001$]. The *TR* and *TR* both correlated [r (.34) = .34, $p < .001$], *MLB-R* [r (.38) = .39, $p < .001$], *MLB-N* and *MLN* [r (.38) = .39, $p < .001$], *SLN* [r (.50) = .41, $p < .01$], and *SLN* [r (.58) = .55, $p < .001$]. Although each of the obtained correlation coefficients was significantly different from zero, only the coefficients for *POV's*, *TR*, and *TR* showed a high degree of correlation with

Table 4b

Correlations Among Eight Rescaled/Standardized Composite Measures
and the Functional Inventory of Significant Communication
Strategies (FISCO) for All Subjects

	FISCO	ACF's	TSS	BLQ-R	TSS	BLQ-R	PLQ-R	SSQs	TSS
FISCO	1.00**	.55**	.80**	.51**	.80**	.51**	.78**	.35*	.43*
ACF's		1.00**	.95**	.45*	.95**	.47*	.78**	.35*	.37
TSS			1.00**	.37**	.99**	.37**	.99**	.39*	.63**
BLQ-R				1.00**	.70**	.95**	.95**	.40**	.83**
TSS					1.00**	.77**	.95**	.40**	.82**
BLQ-R						1.00**	.98**	.41**	.85**
PLQ-R							1.00**	.93**	.87**
SSQs								1.00**	.68**
SES									1.00

*Significant at or beyond the .05 level.

**Significant at or beyond the .01 level.

***Significant at or beyond the .001 level.

Table 30

Reliability of Measures of Academic Achievement in the Functional Inventory of Signaling Communication Strategies (FISCS)
For ABI Subjects

MEASURE	r	SE	1981	r^2	p
FOU's	.86	.04	74 - 98	.73	<.001
FW	.86	.04	73 - 98	.75	<.001
MLU-W	.84	.10	31 - 87	.70	<.001
TR	.86	.06	69 - 99	.74	<.001
MLU-R	.84	.10	31 - 87	.70	<.001
MLU-S	.80	.08	49 - 94	.64	<.001
SCS	.83	.14	47 - 77	.69	<.05
SES	.81	.13	33 - 80	.65	<.01

FOU's = Total Number of Communication Units

FW = Total Number of Words

MLU-W = Mean Length of Communication Units in Words

TR = Total Number of Morphemes

MLU-R = Mean Length of Communication Units in Morphemes

MLU-S = Mean Length of the Five Longest Communication Units in Morphemes

SCS = Percentage of Simple Communication Units

SES = Developmental Sentence Score

FICCI, with shared variances of 73 percent, 39 percent and 79 percent, respectively. The coefficient for RLB-R showed a marked degree of correlation with FICCI and amounted for 49 percent of the variance in FICCI. The variables, RLB-R, RLB-W, and RLB correlated exclusively with FICCI, amounting for 39 percent, 25 percent, and 17 percent of the shared variance, respectively. Finally ICCI evidenced the lowest correlation with FICCI, a low positive relationship in which 12 percent of the variance in FICCI could be predicted from knowledge of the variance in ICCI. On the basis of the observed findings, null hypotheses 5.1 to 5.4 were rejected.

To determine the reliability of the obtained coefficients, the measures of standard error for each variable were computed. Four of the observed correlations appeared significantly reliable relative to size and sign, including RCPA, TBA, TBB, and RLB-R. The respective z 's of .94, .94, .99, and .98 indicated that on future samplings, 93.4 percent of the samples would yield a correlation with FICCI, of the same direction and within one level of the original correlation. Changes in the correlations of RLB-W and RLB-B with FICCI on subsequent samplings would range between .20 and .47, indicating stability relative to sign, but not relative to size. The correlations between ICCI and RLB, and FICCI proved unreliable in terms of both size and sign. On future samplings, the range of variances due to chance alone would produce the following: $r = -.47$ to .17 and $r = .43$ to .89, respectively. This range from a negative correlation to a marked or high correlation, and in the former sample, the sign is reversed at the lower end.

The predictive value of the eight independent variables, RCPA, TBA, RLB-R, TBB, RLB-W, RLB-B, ICCI and FICCI, in relation to the

criterion variable, FICG, was evaluated for all subjects using a step-wise linear multiple regression analysis. The results of this analysis, as shown in Table 2, indicated that the regression of FICG on the eight nonstandardized measures of language form was statistically significant ($F = 18.445$, $df = 8/24$, $p < .001$), yielding a multiple correlation coefficient of .58 and a multiple coefficient of determination of .34. In other words, of the total variance of the FICG scores of 40 children studied, 34 percent can be accounted for by a linear combination of the eight predictor variables. Further analysis of the data indicated, however, that only PPV's ($F = 71.358$, $df = 1/23$, $p < .01$) and MUR ($F = 3.515$, $df = 1/23$, $p = .01$) significantly contributed to the prediction of performance on FICG. After these first two predictor variables have been entered into the equation, little is added to r^2 by successively entering additional variables. These two variables, PPV's and MUR, acting in concert, achieved a multiple correlation of $r = .57$ and multiple coefficient of determination of $r^2 = .32\%$, i.e., 34 percent of the variance in FICG can be predicted from knowledge of the variance in the two predictor variables. However, because the multiple correlation approached .60, predictions which are 36 percent better than chance may be achieved. Therefore, it appears that the combination of two variables may predict the criterion variable almost as well as the combination of eight variables.

Language Use and Fluency of Academic Achievement

The relationship between four measures of academic achievement and FICG were determined in order to test Hypothesis 3. The Pearson product-moment correlation (r) was used to examine the relationship for

Table 21

ANOVA and R^2 's of the Regressions of the Eight Standardized Linguistic Measures on the Functional Inventory of Japanese Communication Strategies (1925)

Measure	df	SS	MS	F	p	R^2
$X_1 = X_0$	8	7695.876	961.970	16.483	<.001	.806
Residual	31	1467.905	47.352			
$X_1 = X_2$	7	7681.748	1097.385	17.944	<.001	.809
Residual	32	1473.858	45.902			
$X_1 = X_3$	6	6793.358	1132.219	18.224	<.001	.768
Residual	33	2028.379	61.435			
$X_1 = X_4$	5	6788.849	1357.769	22.181	<.001	.763
Residual	34	2034.335	60.127			
$X_1 = X_5$	4	6676.864	1669.216	28.077	<.001	.752
Residual	35	2086.396	59.611			
$X_1 = X_6$	3	6658.814	2219.267	36.043	<.001	.750
Residual	36	2098.358	58.315			
$X_1 = X_7$	2	6636.317	3318.159	52.886	<.001	.758
Residual	37	2121.583	57.343			
X_1	1	6611.431	6611.431	105.866	<.001	.732
Residual	38	2194.169	57.741			

X_1 = Total Number of Communication Units (CUC's)

X_2 = Percentage of Communication Units in Words (WU-W)

X_3 = % of Complete Communication Units (CCU)

X_4 = Developmental Sentence Score (DSS)

X_5 = Total Number of Morphemes (TM)

X_6 = Total Number of Words (TW)

Table 54 (continued)

X_1 = Mean Length of Communication Units in Paragraphs (45.0-45)

X_2 = Mean Length of First Longest Communication Units in Paragraphs (45.85-46)

all subjects between performance on FICIS and four subtypes of the Index of Social Adaptation (Koss, 1972). Language, mathematics, social studies and science. The raw performance data for all subjects on these measures appears in Appendix 4, and the intercorrelations among the five measures are included in Table 32. Again, the data demonstrates a high degree of multicollinearity among the variables, which is indicative of high intercorrelations among the independent variables ranging from .38 to .81. Table 33 presents a summary of the correlational analysis, including the correlation coefficients (r), coefficients of determination (r^2) and measures of standard error (SE) obtained between FICIS and each of the four subtypes of academic achievement. When a two-tailed test of significance was applied to the obtained correlations, the results indicated that all correlations were statistically different from zero and worthy of continued investigation. Thus [r (.38) = 56, $p < .01$], then [r (.51) = 51, $p < .01$], then [r (.38) = .38, $p < .05$], and then [r (.38) = .38, $p < .05$]. All coefficients were positive, with TRIS and TRIS correlating to a moderate degree and TRIS and TRIS to a low degree. The amount of shared variance between FICIS and the four subtypes of academic achievement ranged from a low of 15 percent to a high of 25 percent, suggesting that very little variation in the independent variables is linked to variation in the criterion variable. On the basis of these results, null subhypotheses 2.1 to 2.4 were rejected.

The reliability of the obtained coefficients was evaluated by examining the measures of standard error for each variable. These ranged from .12 between TRIS and FICIS and .16 between TRIS and FICIS. The respective SE 's indicated unreliable correlations in terms of size

Table 32

Correlations among Four Measures of Academic Achievement and the Functional Inventory of Inquiries Concernations Questionnaire (FIIQI) for All Subjects

	FIIQI	TEB	TEA	TES	TEQ
FIIQI	1.0000	.39*	.42*	.38*	.35*
TEB		1.0000	-.79**	-.79**	-.78**
TEA			1.00	.82**	.80**
TES				1.0000	.88**
TEQ					1.0000

*Significant at or beyond the .05 level

**Significant at or beyond the .01 level

**Significant at or beyond the .001 level.

TEB = Test of Basic Experiences (Believed)

TEA = Test of Basic Experiences (Anticipation)

TES = Test of Basic Experiences (Social Interaction)

TEQ = Test of Basic Experiences (Language)

Table 33

Relationship of Measures of Academic Achievement to the Functional
Intensity of Cognitive Communication Strategies
(FACS) for All Subjects

MEASURE	r	SE	n	r^2	p
TELL	.35	.13	28 = 38	.13	<.05
TECH	.43	.12	33 = 43	.20	<.01
TECHS	.38	.14	43 = 57	.15	<.05
TECHS	.58	.15	14 = 56	.35	<.01

TELL = Test of Basic Experiences (Language)

TECH = Test of Basic Experiences (Mechanics)

TECHS = Test of Basic Experiences (Social Studies)

TECHS = Test of Basic Experiences (Science)

and sign between all four measures of academic achievement and FICGS. In Figure 1, however, the range of variations due to chance alone would produce the following: TBI and FICGS ($\beta = .08 - .38$); TBI and FICGS ($\beta = .11 - .30$); TBI and FICGS ($\beta = -.34 - .38$), and TBI and FICGS ($\beta = -.32 - .21$). This ranges from no or negligible correlation to a marked or high correlation, and in the last example, the sign is reversed at the lower end.

A stepwise linear multiple regression analysis was used to examine the predictive value of the four independent variables, TBI, TBIK, TBIH and TBIW in relation to the criterion variable FICGS. A summary of this analysis is presented in Table 54. These data showed that the regression of FICGS on the four measures of academic achievement was statistically significant ($F = 3.325$, $df = 4/35$, $p < .05$) and yielded a multiple correlation coefficient of .53 and a multiple coefficient of determination of .28. This means that 28 percent of the total variance in FICGS can be accounted for by a linear combination of the four predictor variables. When the β ratios of the regression weights were considered, however, it was noted that only TBI ($\beta = .3276$, $df = 1/35$, $p < .001$) significantly contributed to the prediction of performance on FICGS. Little is added to β^2 by successively entering the other three variables into the equation. The multiple correlation coefficient and multiple coefficient of determination between TBI and FICGS were .50 and .25, respectively. These data indicate that accurate predictions of FICGS scores from knowledge of scores on TBI can only be achieved at approximately 25 percent better than chance.

Table 24

ANOVA and R^2 's of the Regression of the Basic Measures of Academic Achievement on the Functional Integrity of Cognitive Communication Strategies (FUCCS)

Source	df	SS	MS	F	p	R^2
$X_1 = X_2$	1/38	1535.456	1535.456	3.533	<.05	.218
Residual		4217.386	110.957			
$X_1 = X_3$	1/38	1531.138	1531.138	3.513	<.05	.217
Residual		4226.386	111.220			
$X_1 = X_4$	1/38	1581.478	1581.478	4.521	<.005	.239
Residual		4174.978	109.896			
X_2	1/38	1581.448	1581.448	4.504	<.005	.238
Residual		4175.448	109.847			

X_1 = Test of Basic Experiences--Intuition (TBEI)

X_2 = Test of Basic Experiences--Mathematics (TBE2)

X_3 = Test of Basic Experiences--Social Studies (TBE3)

X_4 = Test of Basic Experiences--Language (TBE4)

Reliability

Three measures of reliability were examined in this investigation to determine the consistency or precision of measurement associated with FICO. These included a measure of internal consistency and measures of intra- and inter-rater reliability.

Internal Consistency

Internal consistency refers to "estimates of reliability based on the average correlation among items within a test" (Dunnell, 1967, p. 282). It is a measure of the homogeneity of test items and in this investigation is represented by coefficient alpha [α]. According to Nunnally (1961), "coefficient alpha sets an upper limit to reliability" (p. 282) and should be applied to all new measurement strategies prior to obtaining other estimates of reliability since reliability estimates obtained using coefficient alpha are highly similar to those obtained from other techniques and suffer fewer of the disadvantages. In most situations, coefficient alpha provides a good estimate of reliability since the major source of measurement error associated with the variable is due primarily to the sampling of content and secondarily to specific situational factors (Nunnally, 1961).

Table 26 presents a summary of the reliability analysis for all subjects on the Functional Inventory of Cognitive Impairations Strategy. As is shown, the inter-item correlations between the 24 self-rated communication strategies ranged from .42 to .85, with a mean \bar{r} of .61, indicating that in general, there is a significant relationship among the items on FICO. Each item appears to measure a unique aspect

Table 33

Summary of the Reliability Analysis on the Functional Dimensions of
Cognitive Remediation Strategies (C-RAS)

SCALE	NUMBER OF ITEMS	Cronbach's Alpha	INTRO-ITR (CORRELATION RANGE)	SQUARED MULTIPLE CORRE- LATION RANGE
REPORTING	8	.60	-.14 - .43	.05 - .39
LOCATION MONITORING	6	.59	-.12 - .56	.12 - .66
PROBECTING	6	.49	-.36 - .37	.03 - .30
PROBECTING	6	-.06	-.18 - .30	.03 - .19
LOWER-LEVEL STRATEGIES	3	.40	-.42 - .36	.16 - .38
HIGHER-LEVEL STRATEGIES	3	.70	-.18 - .61	.49 - .87
ITICS OVERALL	24	.59	-.42 - .63	.21 - .87

of language use and has little in common with the other items on the scale. The squared multiple correlation range indicated that the contribution of individual items to the internal consistency of the scale varied from .51 to .87 (average = .68). Overall, the alpha coefficient for the 28 communication strategies on FIDB was .70, which is indicative of a marked degree of internal consistency overall.

When FIDB was further subdivided into the four language use sub-scales—Reporting, Logical Reasoning, Problem Solving and Projecting—the reliability coefficients of internal consistency were markedly diminished, in part due to the reduced number of items in each sub-scale. Table 28 summarizes the reliability analysis for all subjects on the four major language use sub-scales. In the Reporting sub-scale, item-item correlations ranged from $-.46$ to $.43$, with a mean r of $-.12$, indicative of a low degree of relationship among items in the scale. Inter-item correlations between the items on the other sub-scales ranged from $-.17$ to $.56$, with a mean r of $.13$. In Problem Solving, r values ranged from $-.18$ to $.58$, with a mean r of $-.01$. The squared multiple correlation ranges for the sub-scales were as follows: Reporting ($R^2 = .13$ to $.33$), Logical Reasoning ($R^2 = .17$ to $.41$), Problem Solving ($R^2 = .03$ to $.30$), and Projecting ($R^2 = .03$ to $.30$). The items in the Reporting and Logical Reasoning sub-scales appeared to make the greatest contribution to the internal consistency of the sub-scales, while the items on the Projecting sub-scale made the least. Because of the reduced number of items on each of the sub-scales and because the individual items appeared to measure very different aspects of language use, the alpha coefficient for each of the sub-scales was notably diminished: Reporting $\alpha_{\text{sub}} = .40$, Logical Reasoning $\alpha_{\text{sub}} = .31$, Problem Solving $\alpha_{\text{sub}} = .43$, and Projecting $\alpha_{\text{sub}} =$

64) In the case of the Reporting, logical Reasoning and Proficiency sub-scales, a moderate degree of internal consistency was demonstrated, however, no pattern of internal consistency was observed relative to the Projecting Team. It should be noted, however, that the Projecting sub-scale contained the fewest number of items of any scale.

In an attempt to further isolate some of the factors accounting for the reduced reliability on PIES, a split-half reliability coefficient was computed for the lower versus higher strategies on the Inventory. The analysis resulted in an $r_{\frac{1}{2}}$ of .48 for the lower-level strategies and an $r_{\frac{1}{2}}$ of .26 for the higher-level strategies, with a correlation between the two types of strategies of .59. These findings suggest that there is more item variance related to overall performance on the lower-level strategies than on the higher-level ones and that on future samplings, the likelihood of obtaining a similar score on the lower-level strategies is approximately 48 percent, while there is a 48 percent likelihood of achieving a similar score on the higher-level strategies. This pattern of performance appears to be replicated for each of the four language use sub-scales with the exception of Projecting. The coefficients alpha for the lower-level strategies were as follows: Reporting, $r_{\frac{1}{2}}$ = .45; logical Reasoning, .31; Proficiency, $r_{\frac{1}{2}}$ = .18; and Projecting, -.23 $r_{\frac{1}{2}}$, while the coefficients for the higher-level strategies were: Reporting, $r_{\frac{1}{2}}$ = .46; logical Reasoning, .44; Proficiency, $r_{\frac{1}{2}}$ = .48; and Projecting, $r_{\frac{1}{2}}$ = .15. Finally, the respective correlations (ρ) between the lower- and higher-level strategies on each of the sub-scales were -.13, .35, .38, and -.01.

Inter-rater Reliability

Inter-rater reliability refers to the extent to which a rater will score the same performance in the same way on two different occasions. To establish an inter-rater reliability index, four language samples collected at random, one from each of the subject groups, were reviewed by the investigator. A total of 224 communication strategies was recorded using a point-by-point percentage of agreement formula:

$$\frac{\text{NUMBER OF AGREEMENTS}}{\text{TOTAL OF AGREEMENTS + DISAGREEMENTS}} = 100$$

The obtained percentages represent the ratio of agreed observations to total observations, using each analyzed strategy as an observation. The results of this analysis yielded the following percentages of agreement for samples 1 to 4: 88, 88, 76, and 76. The mean overall inter-rater reliability index was 85.5, which is reflective of a high degree of scoring precision by a single rater.

Intra-rater Reliability

Intra-rater reliability refers to the extent of agreement between different raters classifying the same phenomena. An intra-rater reliability index for POTS was established between two raters following the same procedure described for determining the inter-rater reliability index. Using the point-by-point percentage of agreement formula, the following percentages of agreement for samples 1 to 4 were generated: 45, 39, 71 and 76. The mean overall intra-rater reliability index was 71.8, suggesting a high degree of scoring consistency between the raters.

Summary of Findings

The results of the group comparisons on FLEX and the correlation data between production and criterion variation revealed the findings that follow.

As shown in Table 38, the LI group achieved significantly superior performance on the FLEX overall functional language score and the major use scores of Logical Reasoning and Projecting, as compared to their language-impaired peers (LI), matched for chronological age. Significant differences were not observed between the groups in the use of language for reporting or Predictive purposes. But of the 16 individual communication strategies evaluated by FLEX, only four were used in a significantly different manner by LI and LRI, including Strategies 7, 11, 18 and 21 (see Table 39). In each instance, the LRI group used these strategies with greater frequency than did the LI group. Finally, when the strategies were further subdivided into lower- and higher-level strategies, the LRI and LI groups used comparable numbers of lower-level strategies overall and relative to each major use of language, but differed significantly in their use of some higher-level strategies. In particular, statistically significant differences were observed in the use of higher-level strategies overall, Reporting and Logical Reasoning. A summary of this analysis is presented in Table 38.

A comparison of the language-impaired (LI) and language-normal (LNI) groups, matched for utterance length, showed no significant differences between the groups on FLEX in the overall functional language score and the major use subscores (see Table 38). Statistically

Table 38

Summary of Group Comparisons for the Bayley Functional Language Scores and Subscale Scores on FROF.

GROUPS	OVERALL	REPORTING	FUNCTIONAL RECORDING	NAME CALLING	PHASE CHANGING
L1 L10	*		*		*
L1 L10					
L10 L10?					*
L100 L100?					

*Significant differences between groups

L1 = Language-Impaired Group

L10 = Language-Normal Group Matched for Developmental Age

L10? = Language-Normal Group Matched for Verbal Length

L100 = Language-Normal 4-Year-Olds

L10? = Language-Normal 2-Year-Olds

L100? = Lower Socioeconomic Language-Normal Group

L100 = Higher Socioeconomic Language-Normal Group

Table 37

Summary of Group Comparisons for the Individual
Communication Domains on PLOS

Groups	Language																			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
L1																				
L2							*						*					*		
L3								*												*
L4																		*	*	*
L5					*		*													*
L6																				
L7																				
L8									*											
L9																				
L10																				
L11																				
L12																				
L13																				
L14																				
L15																				
L16																				
L17																				
L18																				
L19																				
L20																				
L21																				
L22																				
L23																				
L24																				
L25																				
L26																				
L27																				
L28																				
L29																				
L30																				
L31																				
L32																				
L33																				
L34																				
L35																				
L36																				
L37																				
L38																				
L39																				
L40																				
L41																				
L42																				
L43																				
L44																				
L45																				
L46																				
L47																				
L48																				
L49																				
L50																				
L51																				
L52																				
L53																				
L54																				
L55																				
L56																				
L57																				
L58																				
L59																				
L60																				
L61																				
L62																				
L63																				
L64																				
L65																				
L66																				
L67																				
L68																				
L69																				
L70																				
L71																				
L72																				
L73																				
L74																				
L75																				
L76																				
L77																				
L78																				
L79																				
L80																				
L81																				
L82																				
L83																				
L84																				
L85																				
L86																				
L87																				
L88																				
L89																				
L90																				
L91																				
L92																				
L93																				
L94																				
L95																				
L96																				
L97																				
L98																				
L99																				
L100																				

Significant differences between groups

L1 = Language Impaired Group

L2 = Language-Impaired Group Matched for Chronological Age

L3 = Language-Impaired Group Matched for Chronological Age

L4 = Language-Impaired Group Matched for Chronological Age

L5 = Language-Impaired Group Matched for Chronological Age

L6 = Language-Impaired Group Matched for Chronological Age

L7 = Language-Impaired Group Matched for Chronological Age

L8 = Language-Impaired Group Matched for Chronological Age

L9 = Language-Impaired Group Matched for Chronological Age

L10 = Language-Impaired Group Matched for Chronological Age

L11 = Language-Impaired Group Matched for Chronological Age

L12 = Language-Impaired Group Matched for Chronological Age

L13 = Language-Impaired Group Matched for Chronological Age

L14 = Language-Impaired Group Matched for Chronological Age

L15 = Language-Impaired Group Matched for Chronological Age

L16 = Language-Impaired Group Matched for Chronological Age

L17 = Language-Impaired Group Matched for Chronological Age

L18 = Language-Impaired Group Matched for Chronological Age

L19 = Language-Impaired Group Matched for Chronological Age

L20 = Language-Impaired Group Matched for Chronological Age

L21 = Language-Impaired Group Matched for Chronological Age

L22 = Language-Impaired Group Matched for Chronological Age

L23 = Language-Impaired Group Matched for Chronological Age

L24 = Language-Impaired Group Matched for Chronological Age

L25 = Language-Impaired Group Matched for Chronological Age

L26 = Language-Impaired Group Matched for Chronological Age

L27 = Language-Impaired Group Matched for Chronological Age

L28 = Language-Impaired Group Matched for Chronological Age

L29 = Language-Impaired Group Matched for Chronological Age

L30 = Language-Impaired Group Matched for Chronological Age

L31 = Language-Impaired Group Matched for Chronological Age

L32 = Language-Impaired Group Matched for Chronological Age

L33 = Language-Impaired Group Matched for Chronological Age

L34 = Language-Impaired Group Matched for Chronological Age

L35 = Language-Impaired Group Matched for Chronological Age

L36 = Language-Impaired Group Matched for Chronological Age

L37 = Language-Impaired Group Matched for Chronological Age

L38 = Language-Impaired Group Matched for Chronological Age

L39 = Language-Impaired Group Matched for Chronological Age

L40 = Language-Impaired Group Matched for Chronological Age

L41 = Language-Impaired Group Matched for Chronological Age

L42 = Language-Impaired Group Matched for Chronological Age

L43 = Language-Impaired Group Matched for Chronological Age

L44 = Language-Impaired Group Matched for Chronological Age

L45 = Language-Impaired Group Matched for Chronological Age

L46 = Language-Impaired Group Matched for Chronological Age

L47 = Language-Impaired Group Matched for Chronological Age

L48 = Language-Impaired Group Matched for Chronological Age

L49 = Language-Impaired Group Matched for Chronological Age

L50 = Language-Impaired Group Matched

Table 38

Members of Group Comparisons for the Lower- and Higher-level
 Comparisons in the Functional Inventory of
 Longitudinal Communication Strategies

Category	Lower-Level Strategies				Higher-Level Strategies			
	Conceptual	Language	Reading	Writing	Reading	Writing	Language	Conceptual
L1								
L2								
L3								
L4								
L5								
L6								
L7								
L8								
L9								
L10								
L11								
L12								
L13								
L14								
L15								
L16								
L17								
L18								
L19								
L20								
L21								
L22								
L23								
L24								
L25								
L26								
L27								
L28								
L29								
L30								
L31								
L32								
L33								
L34								
L35								
L36								
L37								
L38								
L39								
L40								
L41								
L42								
L43								
L44								
L45								
L46								
L47								
L48								
L49								
L50								
L51								
L52								
L53								
L54								
L55								
L56								
L57								
L58								
L59								
L60								
L61								
L62								
L63								
L64								
L65								
L66								
L67								
L68								
L69								
L70								
L71								
L72								
L73								
L74								
L75								
L76								
L77								
L78								
L79								
L80								
L81								
L82								
L83								
L84								
L85								
L86								
L87								
L88								
L89								
L90								
L91								
L92								
L93								
L94								
L95								
L96								
L97								
L98								
L99								
L100								

all different differences between groups

L1 = Long-term/Short-term Group

L2 = Long-term/Short-term Group (Adjusted for Developmental Age)

L3 = Long-term/Short-term Group (Adjusted for Situational Length)

L4 = Long-term/Short-term Group (Adjusted for Situational Length)

L5 = Long-term/Short-term Group (Adjusted for Situational Length)

L6 = Long-term/Short-term Group (Adjusted for Situational Length)

L7 = Long-term/Short-term Group (Adjusted for Situational Length)

L8 = Long-term/Short-term Group (Adjusted for Situational Length)

L9 = Long-term/Short-term Group (Adjusted for Situational Length)

L10 = Long-term/Short-term Group (Adjusted for Situational Length)

L11 = Long-term/Short-term Group (Adjusted for Situational Length)

L12 = Long-term/Short-term Group (Adjusted for Situational Length)

L13 = Long-term/Short-term Group (Adjusted for Situational Length)

significant differences were noted in the use of four individual communication strategies, 8, 11, 20, 21 and 24, with the LI group using more examples of each than the L2 group. These results are summarized in Table 27. Significant differences were also obtained between the groups for use of higher-level strategies, whereas use of lower-level strategies was similar. As summarized in Table 28, the LI group used significantly more higher-level strategies overall, and in particular, Producing and Projecting strategies, than did the L2 group.

A comparison of the intermediate 4- (M4) and 3- (M3) year-olds revealed that with one exception, there was no significant difference in the overall functional language score or the major subscores of language use on FLES. As shown in Table 29, the exception occurred relative to the use of Projecting strategies, with the M4 group producing significantly more of these strategies than the M3 group. Table 30 shows a significant difference in the use of some individual communication strategies, 1, 7 and 11, between the two groups, with M4 using more examples of strategies 1 and 11, and M3 using greater numbers of strategy 7. No significant differences in the use of lower- and higher-level strategies were observed for the groups.

Differences in language use between the lower (L402) and higher (H402) socioeconomic groups were minimal. Table 31 shows no significant differences between the groups on the overall functional language score and the four major use subscores of Reporting, Logical Reasoning, Problem Solving and Projecting. Only one of the individual communication strategies, strategy 8, differentiated between the groups to a statistically significant degree, with H402 using greater numbers of this strategy type than L402. In the lower- and higher-level strategies (see

Table III the groups differed significantly in the use of lower-level logical reasoning strategies, with L2ES using these strategies more frequently.

The results of the correlation and regression analysis revealed that of the three standardized measures of language queries used here, only the TSO was significantly correlated with performance on FICQ ($r = .59$) and significantly contributed to the prediction of performance on FICQ. The correlation between FICQ and the other two variables, TSO and CIL, was not significantly different from zero, and neither of these variables made a statistically significant contribution to the prediction of performance on FICQ.

The correlation coefficients between FICQ and the eight non-standardized measures of language form were all statistically significant, positive correlations ranging from $r = .16$ to $.86$. When the data were subjected to a stepwise linear multiple regression, it was observed that the combination of two variables, FIP's and RUP's, could predict performance on FICQ almost as well as the combination of eight variables.

Finally, the correlations among the four measures of students' achievement and FICQ were all statistically different from zero and positive ($r = .26$ to $.54$). The regression of FICQ on these measures revealed that only the TSO significantly contributed to the prediction of performance on FICQ, the addition of TSO, TRO, and TRO2 to the equation added little to its predictive accuracy.

Results of the reliability analysis revealed a modest degree of internal consistency for overall performance on FICQ ($r_{\text{int}} = .70$).

input and estimated reliability also achieved an acceptable level of precision for the investigations at 10.5 and 21.8, respectively.

Chapter 3

EXPLAN AND CONCLUSIONS

SUMMARY

The purpose of this study was (1) to determine the influence of language ability, age and socioeconomic status on children's language use and (2) to determine the relationship and predictive capacity between measures of linguistic performance, academic achievement and language use.

Subjects were two language-impaired children and thirty language-normal children, all monolingual speakers of average intelligence with no gross peripheral deficits of audition or vision. The children's use of language was evaluated with the Experimental Inventory of Cognitive Communication Strategies (EICC), a structured interview designed to elicit typical strategies of language use in response to a series of pictures. The framework for the classification of the cognitive use of language, developed by Haeg (1986, 1989), served as the basis for the creation of the verbal probes on EICC. At the broadest level of classification in this scheme, utterances are categorized, by use, into four major cognitive types: Reporting, Logical Reasoning, Predicting and Projecting. These four basic uses are subdivided in children's speech through 24 individual communication strategies.

To examine the effects of language ability on language use, the language-impaired children were matched to two groups of language-normal

children, and on the basis of chronological age and the order in the basis of utterance length. When matched for chronological age, the language-impaired children achieved significantly superior performance on the FIGS overall functional language score and the major sub-scores of Logical Reasoning and Projecting as compared to their language-impaired peers. No significant differences for these measures was observed between the language-impaired group and the language-normal group matched for utterance length. These findings seem to support a general developmental delay in language ability; however, trends in the data are indicative of a disorder rather than a delay. The language-impaired group achieved higher overall scores on FIGS than did their younger, normal counterparts matched for utterance length, which suggests that the communicative function of the impaired children is better than their linguistic skills would imply.

The influence of age and socio-economic status on language use was evaluated using a 2 x 2 factorial design, with two age levels (5 years plus or minus 3 months, and 7 years plus or minus 3 months) and two social class levels (lower and higher). Ten children comprised each group. No significant differences were observed for the overall functional language score on FIGS and the sub-scores of Reasoning, Logical Reasoning and Projecting, nor was the main effect of age by socio-economic level significant. In Projecting strategies, the language-impaired 5-year-olds achieved significantly higher scores than the language-impaired 7-year-olds. This general absence of significant findings may be related to the small sample size, the modest differences in age between the two groups or the fact that both the lower and

higher socioeconomic groups attended the same schools and lived in the same rural communities.

The relationship between performance on FICS and three standardized measures of language content *and/or* form, including the TOL (Carrow, 1971), the TOLB (Weaver & Howell, 1977) and the CELF (Carrow, 1974), was investigated for all 48 subjects. Although the standardized measures were significantly intercorrelated, only performance on the TOL was significantly correlated with performance on FICS to a moderately positive degree. These findings suggest that FICS measures a communication skill which is not measured by the standardized measures investigated in this study and underscores the importance of adding a measure of language use to a diagnostic battery since children's linguistic performance on standardized measures is not necessarily reflective of their language *and* what they can do with the linguistic abilities that they have.

The relationship between performance on FICS and eight age-standardized measures of linguistic form, including RPP's, TOL, RPP-B, TOL, RPP-B, RPP-B, RPP-B and CELF, was also explored for all 48 subjects. There were revealed statistically significant positive correlations between FICS and each of the nonstandardized linguistic measures. One explanation for the higher correlations between these measures and FICS may be that they were all derived from the same language sample. Another explanation may be that spontaneous language sampling preserves the interactive nature of communication and therefore provides a more powerful sample of language use than the structured standardized tools of linguistic *and/or* *and/or* form.

Performance on FIOCI and four measures of academic achievement, including TBS, TSS, TOS and TOSH, was correlated and indicated a moderate positive relationship between the measures which was statistically significant. The shared variance between the measures ranged from a low of 13 percent to a high of 25 percent, suggesting that factors other than language use contribute to a significant extent to success in the classroom.

Reliability estimates on FIOCI were reflective of a marked degree of internal consistency overall ($\alpha_{\text{act}} = .70$) and a high degree of uncorrelated (.86) and unshared (.11) reliability.

Discussion

The influence of language ability on language use was not directly resolved by the results of this investigation. Although the data demonstrated that language-impaired children performed more poorly than their language-normal counterparts on the overall functional language score and two out of four subtypes of language use, the differences in performance on these measures between the language-impaired and language-normal children matched for accurate length were not as clear-cut. On every measure, the language-impaired children achieved higher scores than their younger, normal counterparts and on some measures, these results approached significance. It was also interesting to note that the three groups used comparable numbers of lower-level strategies on FIOCI, but LRI used significantly more higher-level strategies overall than LI, and LI used significantly more higher-level strategies overall than NLI. These findings appear to indicate that with normal sample sizes, the nature of the impairment in language

one should be characterized as a "delay" rather than a "disorder". These language-impaired children were capable of using language in much more sophisticated ways than their knowledge of linguistic structure and form suggested, and yet they were not as accomplished as their colleagues at the same age; thus there appeared to be a fundamental disconnect between what they could say grammatically and what they could say pragmatically. This finding was not surprising when Bates' (1976) observation that children arrive at conventional forms of communication by mapping semantic and syntactic onto the already acquired pragmatic system was considered. The ability to function or to interact is learned prior to speech itself and forms the foundation on which the linguistic-related system is built.

In the few studies which have compared the language use of intellectually deficient children to that of language-impaired children, results have been mixed. When utterance length was controlled, Ingram (1971) found language-impaired children at the same stage of development to be more deficient in language use than their history of vocabulary and syntactic structures would indicate. Bellier and McLean (1978) observed similar deficiencies in the language use of older language-impaired children (2.11-3 years) when results of their study were compared to those of Jones (1971), utilized for 3-year-olds in a similar communicative context. While Ingram's (1971) findings are suggestive of a "delay" in the use of language, Bellier and McLean's (1978) results indicate a "delay" since no attempt was made to match the linguistic level of their subjects to those of Jones' (1971).

In contrast, the results of three other investigations suggested similar patterns of language use in the language-impaired and

language-impaired populations studied. Brown (1973) compared the language use of mentally-handicapped children and normal children at Brown's (1973) stage I and II and found essentially the same speech act distribution among the four groups. Marcks and Brunsing (1977) and Carlini et al. (1979) investigated the young hearing-impaired child's ability to communicate, either verbally or nonverbally, a variety of pragmatic intentions. Overall, they found that hearing-impaired children used a variety of communicative functions using both verbal and nonverbal cues and similar to the present investigation, they noted that the number of communicative operations expressed increased with age, even though some length of utterance remained the same. This finding seems to indicate that operations in language use or the pragmatic aspect of language provides development in the other components of language and provides the foundation on which these later linguistic skills are constructed. In the present study, the older language-impaired children knew how to function but they did so with impoverished systems of form and content.

Due to limitations in the sampling process, the influence of age and socio-economic status on language use was not clearly explored. The effect of age on language use was assessed by comparing the performance of FIFTEEN of children at two different levels: 4 years (plus or minus 3 months) and 7 years (plus or minus 3 months). When differences between the two groups on the overall functional language score and the major subareas of language use were analyzed, only use of projecting strategies achieved significant differences, with the 4-year-olds using more of this type of strategy than the 7-year-olds. Two factors may have contributed to the lack of significant findings observed between

the age group. First, the difference in age between the two groups was small, ranging from 8 to 15 months. This limited distinction between the groups may have been insufficient to achieve significant differences in performance. Next, studies of a developmental nature either span a wider age range or allow for a greater discrepancy in age between groups, usually ranging from 18 to 36 months. Second, children may reach a high level of performance on the classification strategies earlier and plateau just prior to or immediately beyond the age levels under investigation. Tough (1974) noted that although 3-year-olds' abilities varied greatly in their verbal output, their use of language already reflected complex thinking.

Schneider et al. (1974) observed a pivotal shift in language use at the age of 3, while Papell (1974) found a change in language patterns reflected in increased diversity of speech and usage at approximately 10 years of age. Schneider et al. (1974) also noted that after age 3, early or lower-level communication strategies maintained their frequency but strategies representing increased levels of complexity showed a marked rise. While the results of the present study are in agreement with Schneider's et al. (1974) findings on lower-level strategies, increased use of more complex strategies was not observed, possibly because this change in language use pattern would not be expected to occur until a much later developmental stage relative to the classification scheme involved.

In the present study, social class had no influence on children's language use. This finding is in direct disagreement with Tough (1972) and others who have found a different orientation toward language use in children from lower and higher socioeconomic levels. Bernstein

(1976) has suggested that old slaves who are brought up in different environments, exposed to different aptitudes and values and to different outlooks on the world in general are not only developing different ways of viewing the world but are also building up different orientations toward the use of language, which reflect differences in the organization of meaning of their experiences. The children included in the present study all attended the same schools and resided in well rural communities in the northeastern northeastern region of North Carolina. The isolated nature of the communities themselves may have obscured any findings relative to social class. In these isolated extremely areas, it appears that families are more alike than different. They pursue a way of life regardless of education and material wealth and this is the heritage which they pass down to their children. For this reason, the conditions in which social class differences is found is necessarily restricted. The children in the present study did not represent the extremes along the continuum of social class; therefore differences in performance between groups would not be as likely.

The study of the relationship between social class and language use has been subject to sampling problems. There are those who believe that the critical variables on which to identify subjects for the purpose of studying emerging language use are the type, quantity and quality of verbal stimulation in the home and not socioeconomic status. Within a given socioeconomic level, the range of environmental stimulation may be as great as to make any generalizations about SES and development extremely tenuous. After CHFD reports much of the available information on home environment of the culturally different has been obtained through retrospective-type questionnaires and the

reliability of such a data gathering technique is suspect. At this time, the relative benefits or disadvantages of the type, quality and quantity of verbal stimulation is subjectively different from its absence. The study of the relationships of early verbal stimulation to the emergence of language still has implications for intervention. The early experience model postulates that early stimulation serves to promote or retard development of certain pre-requisites or functions which are crucial for later development. Inferred in this view is the notion that early identification and management of inadequate stimulation strategies will facilitate the emergence of competence for language use.

The unit of analysis on which comparisons were made represents neither available data of the nature of this study. In Tough's (1977) original work, the language use of children from disparate social environments was compared using frequency of occurrence data, that is, the number of times a child used each of the individual communication strategies was counted and those strategies on which one group scored two or three times as often as the other were noted. In the present investigation, Interval scores were used to neutralize the distorting effects of either the talkative or quiet child. By eliminating the extremes of verbal productivity, this study showed essentially the same use of language by children of lower and higher socioeconomic status on the task presented.

It appears that the Interval score as adopted in the present investigation may not fully measure aspects of competence for language use while frequency of occurrence data and percentage conversations reflect language use performance. If children are capable of using

specific communication strategies, even on a limited basis, they are demonstrating competence or knowledge about the use of those strategies. Future studies should attempt all three measures of language aptitude: internal state, frequency of occurrence and perceptions conveyed to the same group of children to assess the relationship between the measures and to determine which measure provides the most accurate estimate of children's language use skills.

Tough's (1977) results and the results of the present investigation seem to indicate that children from lower and higher socioeconomic levels are capable of using language for the same cognitive purposes, however, for some reason, lower socioeconomic status children choose not to use the language of which they are capable as frequently as their higher socioeconomic status counterparts. In fact, Tough (1977) observed that through a series of prompts, directives questions and comments, children of lower socioeconomic status could be led to interpretations which other children began spontaneously to elicitate. These children have the resources with which to make complex interpretations, but either they are not aware of their own knowledge or they do not use the knowledge for expressing it.

Performance on FICS was correlated with standardized and age-appropriatized measures of language ability and measures of academic achievement to explore the relationship between these measures and a measure of language use. When performance on FICS was compared with standardized measures of language content and/or form, including the TALL, TOL and GLL, only the TALL was significantly correlated with FICS to a moderately positive degree. This suggests that FICS measures a skill not evaluated by the currently available tests of

language content and/or form. Further, it implies that children may be competent users of language even though the linguistic system which they employ is deficient semantically and syntactically. These results would strongly support the addition of an assessment of language use to the clinician's diagnostic battery, as current standardized measures of language ability provide limited predictive accuracy relative to language use.

The relationship between performance on FICD and the nonstandard measures of linguistic form was of greater magnitude. All eight measures, including PDI's, TMI, MLU-W, RSI, MLU-S, MLU-R, TOSI and TOS, achieved statistically significant positive correlations with FICD. The fact that the measures of language use and the measures of linguistic form were derived from the same language sample may have accounted for the elevated correlations among the measures. Also, the interactive nature of conversation is better preserved through spontaneous sampling and provides a more powerful assessment of language use than the standardised tests which are void of natural linguistic and sociolinguistic contexts. It was interesting to note that FICD was not as highly correlated with measures of linguistic complexity as it was with measures of verbal productivity. This finding lends support to the hypothesis that children can be linguistically deficient and still be competent in language use. However, unless they are verbally productive, competence in language use will be difficult to measure.

The relationship between performance on FICD and the four measures of academic achievement were all positive, ranging from a low to moderate degree. This finding seems to indicate that while language

one makes a significant contribution to academic success, it is only one of many potentially influential factors.

Competence and Appropriateness for Future Success

Competence in the use of language is essential for social and educational growth. Children whose use of language is inadequate for the demands of everyday interpersonal and academic communicative exchanges will not be at home in the educational world nor in society at large. In a very general and deep sense, educational failure is often language failure. Children who do not succeed in school may not be using language in the ways required by the school. According to Bellamy ODFB, this does not mean that these children cannot read or write or express themselves acceptably, but rather that there exists a more profound problem—a general mismatch between their linguistic capabilities and the demands that are made upon them.

Harris and Lefsky (DFB) have described the characteristics of competent language use: (1) the progressive mastery of a number of basic functions of language, and (2) the ability to adapt communication to the demands of the communicative situation. Inherent in this notion of competence for use is the obligatory component of functionality—to be competent, language must 'work' for children. As Bellamy ODFB has captured,

Being 'appropriate to the situation' is not some optional extra in language; it is an essential element in the ability to *mean* But functional playness of the child's linguistic system is of a culturally specific and situationally sensitive range of meaning potential. Language is the ability to 'mean' in the situation types, or social contexts that are generated by the culture. When we talk about 'uses of language,' we are

connected with the meaning potential that is associated with particular situation types (p. 26).

PICC was designed to identify the wide variety of language used and strategies reflective of children's growing ability to use the language system to convey meaning. Based on Tough's (1926, 1937) bilateral classification of language use, its analysis is a standardized, efficient, and reliable way to describe communication strategies used by language-normal and language-impaired children; however, it is not without its limitations. Chief among these is the fact that PICC examines only the use of negative communication strategies while ignoring the use of social strategies. Clearly, a comprehensive assessment system of language use would need to recognize and evaluate the dual functions of communication--cognitive and social. Secondly, PICC employs a single sampling strategy, the structured interview, to elicit all information on language use. Since specific parameters of the communication situation influence to a great extent the representativeness of the communication samples obtained, it seems advisable to gather information on language use in response to a variety of sampling strategies reflective of the diverse nature of the communicative exchange. Finally, PICC measures a child's behavioral use of language via during a structured storytelling task. An attempt was made to insure the use of each of the negative communication strategies in Tough's (1926, 1937) series, although the questions employed provided approximately equal opportunities to respond in the Reporting, Logical Reasoning, Predicting and Projecting modes. Thus, if one or another of the individual strategies was not used by a child, it was impossible to judge whether the child was incapable of using it or whether the

sampling conditions did not deluge her and, in a positive sense, FIDS provided an adequate description of children's typical use of language. It did not, however, characterize their true communication potential. FIDS described what children did with language, but not what they could do.

As a result of the present investigation of FIDS, the following suggestions are made for future research:

1. An instrument tool of language use should be developed which measures the social functions of language as well as the cognitive. These functions should be evaluated within a number of changing contexts that reflect the influential factors of language use: the participants, the setting, the topic, and the goal of the communication.
2. Items on the tool should be constructed so that each communication strategy in the functional taxonomy upon which the instrument is based will have an equal number of opportunities of being measured.
3. The development of language use, with particular reference to the acquisition of a wide variety of communication strategies, should be traced over time at two-year intervals with a larger sample.
4. The relationship of social class to language use should be investigated by stratifying the sample in the amount, type, quantity, and quality of verbal stimulation within a given socioeconomic class and not by a simple dichotomization of children into lower and higher social class groups.
5. The efficacy of a stimulation program for the development of competence in language use should be investigated. The goal of the stimulation program would be to enhance the ability of children from different cultural backgrounds to analyze communication situations, to

possible outcomes of potential communication strategies and to encode effectively. This would not entail "teaching all children to learn in similar ways in sets of situations, but rather would enable all children to understand what is likely to be appropriate in given situations within given cultures" (Hurst, Escobé, Rogers & Karmura, 1994, p. 151)...

The content of these suggestions for future research is the development of a comprehensive system with strategies for the management and management of language use that are logically consistent and evolve out of the same theoretical framework. Such a system is not currently available, although a number of guidelines exist for its development...

APPENDIX A

EARLY SIZE AND GROUND TOWELS FOR FREE MEALS AND REDUCED-PRICE MEALS

APPENDIX A

FAMILY SIZE AND INCOME SCALE FOR FREE MEALS AND REDUCED-PRICE MEALS

The following income scales¹ were used by the Avery County Schools and the Wilkes County Schools, respectively, to determine eligibility for Free and Reduced-Price Meals in the 2020-2021 school year.

Avery County Schools

<u>Family Size</u>	<u>Free Meals</u>	<u>Reduced Meals</u>
1	\$ - 4,999	\$,250 - 3,199
2	\$ - 6,999	\$,400 - 5,999
3	\$ - 9,999	\$,550 - 8,999
4	\$ - 12,999	\$,700 - 12,999
5	\$ - 15,999	13,000 - 16,999
6	\$ - 18,999	17,000 - 19,999
7	\$ - 21,999	19,000 - 24,999
8	\$ - 24,999	19,000 - 29,999
Each additional family member	1,400	2,000

Wilkes County Schools

<u>Family Size</u>	<u>Free Meals</u>	<u>Reduced Meals</u>
1	\$ - 4,100	\$,151 - 4,100
2	\$ - 5,900	\$,251 - 5,900
3	\$ - 7,700	\$,351 - 7,700
4	\$ - 9,500	\$,451 - 9,500
5	\$ - 11,300	\$,551 - 11,300
6	\$ - 13,100	\$,651 - 13,100
7	\$ - 14,900	\$,751 - 14,900
8	\$ - 16,700	\$,851 - 16,700
9	\$ - 18,500	\$,951 - 18,500
10	\$ - 20,300	\$,051 - 20,300
11	\$ - 22,100	\$,151 - 22,100
12	\$ - 23,900	\$,251 - 23,900
Each additional family member	\$20	1,200

¹Amounts scaling in dollars.

APPENDIX 1

TRINITY'S FRAMEWORK FOR THE CLASSIFICATION OF LANGUAGE USE

APPENDIX B

TRUCKS' HANDBOOK FOR THE CLASSIFICATION OF LANGUAGE USE

Operational Definitions and Examples

- A. REPORTING--the use of language to provide information about past and present experiences.
 1. Labeling--includes utterances which serve the simple purpose of identifying observed phenomena.
 1. names.
 2. things.
 3. playing.
 4. There's the baby.
 5. I saw some trees.
 2. Referring to details--includes utterances which serve to describe the physical attributes of objects, actions and/or events.
 1. It was a big cat.
 2. There's a little path.
 3. The car is going real fast.
 4. The dog is in the room.
 5. The mother cat's got one eye closed and the other eye looking at them (kittens).
 3. Referring to incidents--includes utterances which describe the occurrence of an action or event.
 1. That little kitten's going out the door.
 2. A dog's chasing the black kitten down the lane.
 3. That cat's running across the road.
 4. He brought the little kitten home to that family.
 5. They give the cat something to eat.
 4. Referring to the sequence of events--includes utterances which accurately reflect the serial nature of several related incidents or conditions.
 1. A man stopped and picked up the little black kitten.
 2. When that little kitten went out the door, the dog saw him and started chasing him.

- 3 The cat and dog are going to get something to eat. Then, they're going back home.
 - 4 I went inside the store and I couldn't find her. Then I finally found her.
 - 5 Hal stopped the car and got out and he tied the wire on the muffler and hooked it on the bottom of the car.
2. Making Comparisons--includes utterances which link objects, actions or experiences through similarities of similarities and differences.
- 1 The dog's bigger than the kitten.
 - 2 The kitten is running faster than the dog.
 - 3 Some is on the grass but not on the bushes.
 - 4 The little black kitten doesn't want to get in quickly like he did over at the house with all the kittens over there.
 - 5 My kitten's not real, it's a play one.
3. Representing Relative Agency--includes utterances which posit an association between two or more actions or events.
- 1 I got up and as I walked that is scratched me.
 - 2 When my nose is running, I sneeze it off.
 - 3 I jumped on my head and it fell down.
 - 4 He usually takes something for me to lay down on so I can go to sleep as we're riding.
 - 5 I want to have a little cat named Spot 'cause it run away.
4. Establishing an Associating Central Reading--includes utterances which focus a group of ideas or situations upon a situation or event and serve to unify the contributing parts into a central whole.
- 1 I think she's not cause all the cats came in and drank up the milk and stirred messes' up.
 - 2 The dog is chasing the cat and if it chooses to run in the road, they might both get run over.
 - 3 The man's stopped to pick up the little black kitten so he can't get run over.
 - 4 Everybody's excited now because Ray brought the little black kitten home.
 - 5 The family's having dinner and here comes along the lady hunting for the little kitten.
5. Reflecting on the Reading of Experiences--includes utterances which express the speaker's attitudes or feelings about a situation.
- 1 When I fly up in an airplane, it scared me to death.
 - 2 I couldn't keep it cause I don't like animals.
 - 3 We were real close we left the hamster there overnight.
 - 4 That kitten's a mean one.
 - 5 It isn't nice for the dog to chase the kitten.

11. Explicit Metalinguage--the use of language which employs rational thought and argument to interpret experiences.

- A. Describing a Process--includes utterances which described a particular method of doing something, generally involving several steps or sequential.

1. I'd feed the kitten and put it in a box and put a little blanket in so it won't be alone. I'd play with it too.
2. You should stop and look at each side and see if a car is coming and if a car isn't coming, you might go across.
3. The muffler started rattling and had had some when it the car and he stopped the car and got out and he told the way on the muffler and looked it on the bottom of the car. That told the muffler no.
4. Well 'all the cars go by. Look in both directions. Then if there's nothing coming, you can walk across the road.
5. When the water comes, we get us some water and take it up there and get the toothbrush and drop that in. We wash that off.

- B. Describing Causal and Reciprocal Relationships--includes utterances which acknowledge a logical and different connection between two situations and which express this more commonly in terms of "then" and "why."

1. I've always been waking up too early in the morning.
2. They're gonna get in the house cause she left the door open.
3. Both kittens are lost cause they went outside.
4. The dog'll probably stick up with the kitten cause it's trapped.
5. He doesn't want the kids so there's some it hurts his ears.

- C. Describing Problems and Their Solutions--includes utterances which acknowledge obstacles to a course of action and suggest ways to overcome them.

1. He is picking up the dog so it won't get run over by the traffic.
2. The cat's holding the little black kitten so the kitten won't grab it and hurt it.
3. We can't have kittens which means my mom's allergic to it.
4. It'll be real hard to find his owner so I'll keep it.
5. I'd make it a little house and lock it in so no one'd take it.

- D. Justifying Actions and Beliefs--includes utterances which offer a reason or explanation for actions and behavior which apply only to a particular situation.

1. She might've had to check cause she had on her good clothes.

2. She might've wanted the wooden taste they've had since.
3. Some of the kids are going back out because they want to go back to their own house.
4. He looks like a carpenter since he's got an awnsole.
5. Every time a cat gets in the kitchen, some water is out since it's allergic to cats.

6. Reflecting on Events and Drawing Conclusions--includes utterances which describe the implications of an action or event and result in judgments.

1. The kitchen floor made a mess on the table and it might ruin the tablecloth.
2. The cat ate the neighbor's fish. They left the doors open and the cats came in and they're eating up all the fish.
3. It's good that the mother stopped so the dog won't catch the little black cat.
4. He's taking it inside so maybe he can give it to his children.
5. It's good to have a cat so what the children don't eat, it can eat.

7. Speculating/Prescribing--includes utterances which provide an alternative rule or rules to explain observed phenomena.

1. The cats shouldn't climb up on the table.
2. The cat shouldn't eat things she read without looking.
3. The cats are not allowed to go in the kitchen eating up.
4. When you get off the school bus, you shouldn't walk behind it; always walk in front of it.
5. Mom says how to climb trees when something's after them.

III. PREDICTING--the use of language to extend communication beyond immediate present or past experiences to events that have not yet occurred and which may never take place.

8. Anticipating/Forecasting--includes utterances which contain direct future happenings of events concerns.

1. The lady's gonna clean up the kitchen.
2. The dog might catch up with the cat.
3. The cat's gonna find out where the dog lives.
4. The lady might come in the house.
5. The cat'll never run off apples.

9. Anticipating Detail of Actions and Events--includes utterances which anticipate or describe future happenings of events concerns.

1. The kitten might turn around and run back out through here and jump up through the bushes back up to its house.
2. The cat's gonna get in the little truck.

3. The kitten wants to go off on another walk by herself.
 4. The kitten'll tear up the house and tear the curtains down and eat up all the food and make the lady's chest feel down.
 5. My dad's gonna get me a brand new bicycle.
- C. Anticipation Sequence of Events--includes utterances which propose an ordered series of related actions or events.
1. I'd try to clean up all the mess they make, then run
 2. Then she will hit the kittens and make them go out
 3. That dog will chase the cat and guess he'll bite somewhere.
 4. She's gonna hit those cats go, then she's gonna cry
 5. The dog is gonna stop and he's gonna get off and get his cat and get back on.
- D. Anticipative Problems and Possible Solutions--includes utterances which anticipate possible obstacles to a planned course of action and suggest ways to overcome them.
1. I think she'll get the kittens. In a few so they can't get out
 2. If the mother's get rid of the cats, she should call the police.
 3. It looks like she was having somebody over for dinner so she would call them back and tell them that everything's messed up.
 4. A whole bunch of people might get the kitten and maybe it's a fat and if it's not very old, the man might eat it/kill it.
 5. They might build a fire for the cat to get warm in case it's cold.
- E. Anticipation and Reappraisal Alternative Courses of Action--includes utterances which offer several different interpretations or explanations of a situation.
1. She might call the police or she had off animal cruelty.
 2. She might put the kittens up for a real long time or she might put them out and say hey there come in for a real long time.
 3. I think the kitten's gonna go out the porch or go out in the yard or go hide.
 4. He might take the cat home or put it in his truck or sell it to somebody.
 5. He'll might want to give the kitten to one of her friends or one of her cousins or to somebody for their birthday.
- F. Predicting Consequences of Actions or Events--includes utterances which suggest a possible outcome of some immediate or future action or event.

1. The cat jumps up on the table right near the radiator and it starts its thing then the collector and tries to run.
2. If that cat backs up on that bad dog, it will get run over.
3. If the kitten doesn't run, the dog'll get it.
4. If the kitten goes to cross the street, it'll get run over because of all the traffic.
5. If she backs on the door and gets the cat, the kid'll cry.

IV. FUNCTIONS--the use of language which is unfamiliar or unusual to someone.

A. Projecting onto the experiences of others--includes utterances which convey into everyday consciousness from mother's perspective.

1. The lady's thinking about cleaning that up.
2. The little black kitten doesn't want to get caught by that dog.
3. The little black kitten's thinking that he's lost.
4. The bread-crover's thinking that he's gonna hit the black kitten.
5. I think the kitten will come up in the door and want to see the lady.

B. Projecting her feelings of others--includes utterances with content that it feels like to be another individual. Feelings and attitudes which are representative of mother's point of view are represented.

1. The mother got to really mad at those kittens.
2. She hated to clean up messes.
3. The kitten's afraid that the dog might catch her.
4. The little black kitten's thinking that he's lost.
5. When I get up some real nibbly, mother gets mad at me.

C. Projecting her feelings of others--includes utterances which convey how mother themselves would respond to a particular situation or experience.

1. The lady's gonna hurt her kittens.
2. That old lady said "She's a hurt."
3. She looks like she said "He's my goodness," but she doesn't look like she's gonna stop them.
4. The mother might be saying "He can't pay for all that bad food."
5. The son's saying "He's gonna take you home and give you some milk and some cat food."

2. Pinpointing your a character's inner experience—includes various scenes in which the speaker conjectures about his own or another's feelings and reactions to unfamiliar perceptions or events:
1. The dog's thinking about eating the cat.
 2. The dog's thinking about finding a new little dead mouse that keeps.
 3. The dog's thinking "I want to kill that cat."
 4. She's gonna kill them babies.

APPENDIX 1

LANGUAGE SAMPLE ELICITATION PROTOCOL VIA TONGUE

APPENDIX C

LANGUAGE SAMPLE ELICITATION PROTOCOL, ALL THINGS

- i. Preparation
 - A. Elicitor--language clinician
 - B. Materials
 1. Practice stimuli--"Don't Forget His Lunch," p. 1
 2. Sample stimuli--"Black Cross Gets Lunch," p. 1, 2, 3, 4, 5, 6
 - C. Practice and Sample Statements--see below
- ii. Repetition/revision activities
 - A. Repetition/imitating language the child is informed converser can use (3-4 minutes.)
 - B. Instructions and modeling

SAY: "I'D LIKE YOU TO TELL ME SOME STORIES. I'M GOING TO SHOW YOU SOME PICTURES AND I'D LIKE YOU TO MAKE UP A STORY FOR EACH PICTURE. BUT FIRST LET ME SHOW YOU HOW TO DO IT. (Presents "Don't Forget His Lunch," Pictures 1.)

See 1: SAY: "SUPPOSE I ASKED YOU TO TELL ME ALL ABOUT THIS PICTURE. YOU MIGHT SAY, IT LOOKS LIKE BEN HAS MADE SOME SANDWICHES FOR LUNCH AND BEN HAS SOME GUY AND FORGOTTEN THEM.

See 2: THEN SUPPOSE I ASKED YOU, WHAT IS THE MAN DOING WITH (points to man in picture.) YOU MIGHT SAY, HE'S GOING TO WORK. AND SUPPOSE I SAID, WHAT IS HE DOING THAT? YOU MIGHT SAY, SO HE CAN EARN SOME MONEY FOR HIS FAMILY.

See 3: AND THEN SUPPOSE I SAID, HOW DO YOU THINK BEN (points to woman in picture) FEELS. YOU MIGHT SAY, SHE FEELS LIKE SHE KNOWS BEN HAS FORGOTTEN HIS LUNCH.
 - C. Practice

1. Say: NOW YOU TRY CARD.
2. Follow elicitation procedure for practice and sample items.

III. Evaluation

A. Prepare practice and stimulus pictures, one at a time:

1. Ask first question of each set (see below)
2. Ask alternate question of each set if:
 - a. Child gives a response which is more than 50 percent intelligible.
 - b. Child gives a response such as "I don't know."
 - c. A two-second pause is observed.
3. Continue until child responds to all three questions for the practice pictures and all eight questions for each sample picture.

B. Practice Statements:

- Set A: (a) WHAT DO YOU THINK THE CAT IS DOING?
 (b) IF YOU WERE THE CAT, WHAT WOULD YOU SAY?
- Set B: (a) CAN THE CAT HEAR THE MAN WHEN HE'S NOT? WHY DOESN'T HE HEAR HIM?
 (b) DOES THE MAN HEAR THE CAT? WHY DOESN'T HE HEAR THE CAT?
- Set C: (a) WHAT DO YOU THINK THE CHILDREN WILL DO NOW?
 (b) WILL THE CHILDREN TRY TO CATCH THESE CATS? HOW WILL THEY DO IT?
- Summary: SO IT LOOKS LIKE BEN IS UPSET BECAUSE DAD WAS COME OFF TO WORK AND FORGOTTEN HIS SANDWICHES.

C. Sample Statements:

NOW LET'S LOOK AT SOME MORE PICTURES.

THE BLACK RIFTON MERE LIST

Pictures 1

- Set 1 a. Tell me all about this picture.
b. What do you think is happening here?
- Set 2 a. What do you think is wrong here? Why do you think that?
b. What are the kittens doing? I wonder why they're doing that?
- Set 3 a. What else do you think is wrong here? Why do you think that?
b. What else are the kittens doing? I wonder why they're doing that?
- Set 4 a. How do you think the lady feels? Why do you think that?
b. Do you think the lady is mad? Why is she mad?
- Set 5 a. What will the lady do next?
b. If this were you, what would you do?
- Set 6 a. What do you think the mother cat is thinking?
b. If you were the mother cat, what would you be thinking?
- Set 7 a. Tell me about something that you did that made your mother mad.
b. Have you ever made your mother mad? What did you do?
- Set 8 a. Let's look at the picture again. What do you think is going to happen next? Why do you think that?
b. What do you think the black kitten is going to do next? Why do you think that?

Summary: So, it looks like the lady is upset because the kittens have made such a mess. They have spilled the milk, eaten the last dogs and ruined her hairdo! And during all this confusion, the little black kitten has wandered, unnoticed, out the back door.

Picture 11

- Set 1 a. Tell me all about this picture.
b. What do you think is happening here?
- Set 2 a. What do you think is wrong here? Why do you think that?
b. What is happening to the little black kitten now?
- Set 3 a. Tell me all about the road in this picture.
b. What kind of road are the dog and the little black kitten coming out? Why do you think that?
- Set 4 a. What kinds of things might happen when there's a lot of traffic on a road? Anything about?
b. Have you ever seen a busy road like the one in the picture? Tell me about it.
- Set 5 a. How do you think the little black kitten feels? Why do you think so?
b. Do you think the little black kitten is frightened? Why?
- Set 6 a. What do you think the dog is thinking?
b. If you were the dog, what would you be thinking?
- Set 7 a. What will the little black kitten do now? Why?
b. If you were the little black kitten, what would you do? Why?
- Set 8 a. What do you think is going to happen next? Why do you think that?
b. What will happen to the little black kitten now? Why do you think that?

SUMMARY: Oh, a big dog is chasing the little black kitten across a busy road. If the kitten runs onto the road, he might get run over.

Flashes III

- Set 1 a. Tell us all about this picture.
b. What do you think black kitten is doing now?
- Set 2 a. What do you think is wrong here? Why do you think that?
b. What will happen if the black kitten keeps running? Why do you think that?
- Set 3 a. What do you think the boy in the bus is thinking?
b. If you were the boy in the bus, what would you be thinking?
- Set 4 a. What do you think the man in the truck is thinking?
b. If you were the man in the truck, what would you be thinking?
- Set 5 a. What do you think the little black kitten is thinking?
b. If you were the little black kitten, what would you be thinking?
- Set 6 a. What should you do when you come to a busy road? Why?
b. What's the best way to cross a busy road?
- Set 7 a. Tell us about a trip that you took in a car or a bus.
b. Have you ever travelled anywhere by car or by bus? Tell us about your trip.
- Set 8 a. What do you think is going to happen next? Why do you think that?
b. What do you think will happen to black kitten next? Why?

SUMMARY: Black kitten has reached the safe that safely hid her by hiding. But he might be in danger from the traffic.

Exercises 12

- Set 1 a. Tell me all about this picture.
b. Now, what do you think is happening?
- Set 2 a. What is the man going to do? Why is he going to do that?
b. Is the man going to pick black kitten up? Why is he going to do that?
- Set 3 a. Is it a good thing that the man has escaped? Why do you think so?
b. What might happen to black kitten if no one picked him up? Anything else?
- Set 4 a. What do you think the man is saying to black kitten?
b. If you were the man, what would you say to black kitten?
- Set 5 a. What do you think black kitten is thinking?
b. If you were black kitten, what would you be thinking?
- Set 6 a. Tell me about a time you got lost.
b. Have you ever been lost? What happened?
- Set 7 a. Let's look at the picture again. What kind of work do you think the man does? How do you know?
b. Do you think the man might be a stolen animal? Why do you think so?
- Set 8 a. What do you think the man will do now? Why do you think that?
b. Where will the man take black kitten now? Why do you think that?

SUMMARY: The man has escaped his job to take care of the little black kitten because the kitten seems to be lost.

Exercise 1

- Set 1 a. Tell me all about this place.
b. What do you think is happening here?
- Set 2 a. What is the man doing here? Why is he doing that?
b. Where has the man brought the kitten? Why do you think he did that?
- Set 3 a. How do you think the children feel? Why do you think so?
b. Do you think the children are happy? Why do you think so?
- Set 4 a. How do you think the mother feels? Why do you think that?
b. Do you think the mother is pleased? Why or why not?
- Set 5 a. What do you think the mother will say? Why do you think that?
b. What would your mother say if you brought a lost kitten home? Why would she say that?
- Set 6 a. What do you think the children will do next?
b. How will the children take care of black kitten now?
- Set 7 a. What would you do if someone brought a lost animal to your house? Anything else?
b. Did you ever find a lost animal and bring it home to your family? What happened?
- Set 8 a. What do you think will happen next? Why do you think that?
b. Do you think the black kitten will stay with the family? Why do you think that?

SUMMARY: The man has brought the kitten home to his family and all the children are happy to see him.

Picture 21

- Set 1 a. Tell me all about this picture.
b. What do you think is happening here?
- Set 2 a. What is everybody doing here?
b. What before the little black kitten (old kitten, mother?) doing now?
- Set 3 a. What do you think the little girl is thinking now?
b. If you were the little girl, what would you be thinking?
- Set 4 a. Tell me about the lady coming up the path.
b. What is the lady coming up the path doing?
- Set 5 a. What will the lady say to the family?
b. If you were the lady, what would you say to the family?
- Set 6 a. What do you think the black kitten will want to do? Why do you think that?
b. If you were the black kitten, what would you want to do?
- Set 7 a. How would you take care of a kitten if you had one?
b. What kinds of things do you need to do to take care of a kitten?
- Set 8 a. How do you think this story ends? Why do you think that?
b. Do you think black kitten stays with the family? Why? why not?

STORY: The family and the little black kitten are having dinner. The lady who lost the kitten is looking for it. (Continues nursery with ending that child has provided.)

APPENDIX B

STIMULUS MATERIALS FOR LANGUAGE SAMPLE COLLECTION

APPENDIX B

STANDARD REFERENCES FOR LANDING SAMPLE ELICITATION



From *Life* magazine, 1950



Illustration by John D. Smith

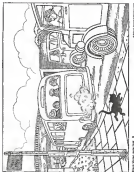




Illustration by [Name]



Figure 1. Children in a classroom.

Figure 2. Children in a classroom.



Photo: Andrew Gifford 2005



Illustration by John Doe

APPENDIX C

PROTOCOL FOR TRANSCRIPTION AND SEGMENTATION OF LANGUAGE SAMPLES

APPENDIX E

PROTOCOL FOR TRANSCRIPTION AND IDENTIFICATION OF LANGUAGE SAMPLES¹

I. Transcription

- A. Examiner's initials [Record all verbal behaviors, whether or not they are part of the elicitation protocol.]

1. Use transcription recording form
2. Record any additional remarks in capital letters.

- B. Subject's language [Record all verbal behaviors.]

1. Transcribe the child's language in the space provided on the transcription recording form
2. Reinterspace between language units, use no caps, and no punctuation
3. Note certain disordered elements in parentheses
4. For each utterance item, number each language unit consecutively and segment following the segmentation system (adapted from Lohr, 1963, pp. 4-23). Lohr's system of segmentation combines several approaches. First, the subject's speech is segmented by oral transition patterns and then, within each transition segment, systematic semantic units are identified (Lohr, p. 32).

II. Segmentation

- A. PHONOLABELING (PFI) (PFI). A PFI is "judged by the occurrence of transitions, stress, and pauses in the subjects' utterances" (Lohr, 1963, p. 5). Silent pauses and tonal junctions can be recorded as a double cross (X2). "A P2 is usually marked by a definite pause preceded by a diminishing of force and a drop in the pitch of the voice for a rise for question?" (Lohr, 1963, p. 40). Double bar (X2) and single bar (X) are used to represent stress points of tone finality. According to this definition, the PFI occurs between P junctions. In addition

¹Based on Lohr (1963, 1976) in Barron-Blaikley et al. (1974).

to these sentences, ellipsis [. . .] can be used to indicate the length of a pause, by transcribing approximately one syllable [. . .] for each second of pause time (Kavanaugh et al., 1979).

- ii. **CONSTITUTION UNIT (CU).** A CU is defined as a substructure of the larger phonological unit . . . because it may be identified by the semantic meaning which is being conceptualized (Green, 1980, p. 50). According to Kahn, it was defined by Kahn (1980) as "a group of words which cannot be further divided without loss of their essential meaning". Thus, a CU would never cross a PB boundary, although there could be more than one CU within a PB. Several specific rules for segmenting are as follows:

1. A CU need not be complete in structure:

What will the last be now?

- a. Follow up?

This example is kept a PB because it is marked by pauses and intonational boundaries, and a CU because it is an implicitly complete response.

2. A "sentence" that contains utterances that are "bound above" (i.e., a compound sentence conjunct with "and," "and then," or "but") is considered one or more CUs:

- a. John black kitten will walk out the door
 b. and he'll run down the road?

This sentence is made semantically unambiguous, with a PB, in order to isolate independent propositions. When such a division is made on the basis of language structure alone, and no pause or intonation break separates the units (that is, they fall within one PB), a line should be drawn to connect the two CUs:

3. A conjunct "sentence" in which subject or verb deletion has occurred will be treated as one CU, provided it falls within one PB:

- a. John black kitten will walk out the door and run down the road?

In the above example, the subject "he" has been deleted from the second clause. It is considered one CU, since it falls within one PB and because the phrase "and run down the road" cannot stand alone.

¹ Utterances in caps indicate those spoken by the elicitor.

4. The child's use of nominal juncture may produce grammatically independent propositions that are not complete in themselves

- a. *The black kitten walked out the door*
- b. *And ran down the road*

In this example, each CB falls within a different CP, thus requiring separation...

5. "Adjunct" clauses are counted as one CB, provided all clauses fall with one CP

- a. *The black kitten walked out the door because he wanted to run down the road*

Though the clauses are syntactically complex, they must remain as one CB to preserve the meaning.

If the clauses are separated by nominal juncture, however, they will combine (as for next) CBs.

- a. *The kitten likes to play with yarn*
- b. *Because it's so much fun*

6. Some additional separating conventions may be necessary.

- a. Separating "adjunct" CBs-

- (1) If two or more clauses are linked to an adjoining clause, the entire utterance is counted as one CB

- (a) *For the boy already knew what time to catch the bus*
- (b) *and he's going to get his books*

- b. Separating "relative" in CBs.

- (1) When there is a CB which a CB, each is counted separately

The kitten has a pretty collar [it shines] around her neck would be separated as follows

- (a) *The kitten has a pretty collar [it shines]*
- (b) *around her neck*
- (c) *[it shines]*

- (2) An explanation or expansion within or at the end of a CB is counted as part of the CB to which it refers:

Let's get a kitty . . . a play cat

APPENDIX F
RULES FOR COUNTING VOTERS

APPENDIX F

RULES FOR COUNTING MORPHEMES [adapted from Brown, 1973]

1. When a word is repeated for emphasis, count each occurrence as 10
a total of three [e.g., "No, No, No"].
2. Count all connected words (two or more free morphemes, proper nouns
and repeated reduplications) as single words unless there is
evidence of independent use of those elements elsewhere in the
sample [e.g., *well-known*, *well-known*, *bird-like*, *blue-eyes*, *quack-
quack*, *right-right*].
3. Count all derivatives as single words unless there is evidence of
creative application of this ending to other words [e.g., *reminds*,
dogged].
4. Count all regular inflectional endings as separate morphemes
[e.g., plural *-s*, *sup*, past *-ed*, *jumped*, comparative *-er*,
big, third person singular *-s*, *note*, *progressive* *-ing*,
going, comparative *-er*, *bigger*, superlative *-est*, *biggest*].
5. Count all words undergoing irregular inflectional endings as
single words [e.g., plural, *men*, *part*, *went*; comparative, *better*;
superlative, *best*].
6. Count irregularized inflectional endings as separate morphemes
[e.g., plural, *children*; past, *went*; superlative, *bestest*].
7. Count all auxiliaries, contracted or uncontracted, as separate
morphemes [is, have, will, can, *can't*].
8. Count all catenatives as single morphemes [isn't, seems, *going*].
9. Count vocatives as single morphemes when they function as an integral
part of the sentence ["The car goes *vrooo*"].
10. Only fillers [e.g., "yes," "er," "uh"].
11. Only interjections unless they appear to function as a question
[e.g., "wow," "you know," "oh!"].

APPENDIX 1
RULES FOR COUNTING WORDS

1000

1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

1. Count repetitions for syllables as discussed under "morphemes" above.
2. Count hyphenated words, compound words, and proper names their function as single units as one word [e.g., "Herryngwood," "Father Time," "Westy Ltd"].
3. Count each unit of a verbal combination as a separate word [e.g., "have been playing" = 3 words]
4. Count contractions of the subject and predicate, such as "it's" and "you're" as single words.
5. Count contractions of the verb and negative (e.g., "isn't" and "don't") as single words.
6. Count as one word, words that have inflectional endings or that take a phonologically distinct comparative form.
7. Count rhymed expressions as one word [e.g., "the day," "hey week," "here it," "disappears," "infinite," "happy," "kicker-up," "what's," "what?"] if it occurs alone.
8. Count the following as two words: "let you," "let us," "let me," "let's see," "as we," "otherwise goes," "kindly," "oughtn't," "won't," "think" if followed by an object].
9. Count titles for words as discussed under morphemes.
10. Count colloquialisms and hoodlums as one word [e.g., "yes," "ya," "y'know," "unhappy-sadness," "now," "yeah," "whoops," "uh-huh"]
11. Only follow up with an "and," "or," "but."

APPENDIX B

RAW SCORES ON STANDARDIZED LINGUISTIC MEASURES AND THE OVERALL
SCORE ON THE FUNCTIONAL INVENTORY OF COGNITIVE
COMMUNICATION STRATEGIES ADMINISTERED BY
ALL SUBJECTS

APPENDIX B

RAW DATA ON STANDARDIZED LINGUISTIC MEASURES AND THE OVERALL
SCORE ON THE FUNCTIONAL PROFICIENCY OF COMMUNICATIVE
COMMUNICATION SKILLS TEST ADMINISTERED BY
ALL SUBJECTS

STANDARDIZED LINGUISTIC MEASURES				
SUBJECT	TOEFL	TOEFL	TOEFL	TOEFL
1	75	85	90	87
2	78	88	92	89
3	76	86	91	88
4	77	87	93	90
5	79	89	94	91
6	80	90	95	92
7	81	91	96	93
8	82	92	97	94
9	83	93	98	95
10	84	94	99	96
11	85	95	100	97
12	86	96	101	98
13	87	97	102	99
14	88	98	103	100
15	89	99	104	101
16	90	100	105	102
17	91	101	106	103
18	92	102	107	104
19	93	103	108	105
20	94	104	109	106
21	95	105	110	107
22	96	106	111	108
23	97	107	112	109
24	98	108	113	110
25	99	109	114	111
26	100	110	115	112
27	101	111	116	113
28	102	112	117	114
29	103	113	118	115
30	104	114	119	116
31	105	115	120	117
32	106	116	121	118
33	107	117	122	119
34	108	118	123	120
35	109	119	124	121
36	110	120	125	122
37	111	121	126	123
38	112	122	127	124
39	113	123	128	125
40	114	124	129	126
41	115	125	130	127
42	116	126	131	128
43	117	127	132	129
44	118	128	133	130
45	119	129	134	131
46	120	130	135	132
47	121	131	136	133
48	122	132	137	134
49	123	133	138	135
50	124	134	139	136
51	125	135	140	137
52	126	136	141	138
53	127	137	142	139
54	128	138	143	140
55	129	139	144	141
56	130	140	145	142
57	131	141	146	143
58	132	142	147	144
59	133	143	148	145
60	134	144	149	146
61	135	145	150	147
62	136	146	151	148
63	137	147	152	149
64	138	148	153	150
65	139	149	154	151
66	140	150	155	152
67	141	151	156	153
68	142	152	157	154
69	143	153	158	155
70	144	154	159	156
71	145	155	160	157
72	146	156	161	158
73	147	157	162	159
74	148	158	163	160
75	149	159	164	161
76	150	160	165	162
77	151	161	166	163
78	152	162	167	164
79	153	163	168	165
80	154	164	169	166
81	155	165	170	167
82	156	166	171	168
83	157	167	172	169
84	158	168	173	170
85	159	169	174	171
86	160	170	175	172
87	161	171	176	173
88	162	172	177	174
89	163	173	178	175
90	164	174	179	176
91	165	175	180	177
92	166	176	181	178
93	167	177	182	179
94	168	178	183	180
95	169	179	184	181
96	170	180	185	182
97	171	181	186	183
98	172	182	187	184
99	173	183	188	185
100	174	184	189	186
101	175	185	190	187
102	176	186	191	188
103	177	187	192	189
104	178	188	193	190
105	179	189	194	191
106	180	190	195	192
107	181	191	196	193
108	182	192	197	194
109	183	193	198	195
110	184	194	199	196
111	185	195	200	197
112	186	196	201	198
113	187	197	202	199
114	188	198	203	200
115	189	199	204	201
116	190	200	205	202
117	191	201	206	203
118	192	202	207	204
119	193	203	208	205
120	194	204	209	206
121	195	205	210	207
122	196	206	211	208
123	197	207	212	209
124	198	208	213	210
125	199	209	214	211
126	200	210	215	212
127	201	211	216	213
128	202	212	217	214
129	203	213	218	215
130	204	214	219	216
131	205	215	220	217
132	206	216	221	218
133	207	217	222	219
134	208	218	223	220
135	209	219	224	221
136	210	220	225	222
137	211	221	226	223
138	212	222	227	224
139	213	223	228	225
140	214	224	229	226
141	215	225	230	227
142	216	226	231	228
143	217	227	232	229
144	218	228	233	230
145	219	229	234	231
146	220	230	235	232
147	221	231	236	233
148	222	232	237	234
149	223	233	238	235
150	224	234	239	236
151	225	235	240	237
152	226	236	241	238
153	227	237	242	239
154	228	238	243	240
155	229	239	244	241
156	230	240	245	242
157	231	241	246	243
158	232	242	247	244
159	233	243	248	245
160	234	244	249	246
161	235	245	250	247
162	236	246	251	248
163	237	247	252	249
164	238	248	253	250
165	239	249	254	251
166	240	250	255	252
167	241	251	256	253
168	242	252	257	254
169	243	253	258	255
170	244	254	259	256
171	245	255	260	257
172	246	256	261	258
173	247	257	262	259
174	248	258	263	260
175	249	259	264	261
176	250	260	265	262
177	251	261	266	263
178	252	262	267	264
179	253	263	268	265
180	254	264	269	266
181	255	265	270	267
182	256	266	271	268
183	257	267	272	269
184	258	268	273	270
185	259	269	274	271
186	260	270	275	272
187	261	271	276	273
188	262	272	277	274
189	263	273	278	275
190	264	274	279	276
191	265	275	280	277
192	266	276	281	278
193	267	277	282	279
194	268	278	283	280
195	269	279	284	281
196	270	280	285	282
197	271	281	286	283
198	272	282	287	284
199	273	283	288	285
200	274	284	289	286
201	275	285	290	287
202	276	286	291	288
203	277	287	292	289
204	278	288	293	290
205	279	289	294	291
206	280	290	295	292
207	281	291	296	293
208	282	292	297	294
209	283	293	298	295
210	284	294	299	296
211	285	295	300	297
212	286	296	301	298
213	287	297	302	299
214	288	298	303	300
215	289	299	304	301
216	290	300	305	302
217	291	301	306	303
218	292	302	307	304
219	293	303	308	305
220	294	304	309	306
221	295	305	310	307
222	296	306	311	308
223	297	307	312	309
224	298	308	313	310
225	299	309	314	311
226	300	310	315	312
227	301	311	316	313
228	302	312	317	314
229	303	313	318	315
230	304	314	319	316
231	305	315	320	317
232	306	316	321	318
233	307	317	322	319
234	308	318	323	320
235	309	319	324	321
236	310	320	325	322
237	311	321	326	323
238	312	322	327	324
239	313	323	328	325
240	314	324	329	326
241	315	325	330	327
242	316	326	331	328
243	317	327	332	329
244	318	328	333	330
245	319	329	334	331
246	320	330	335	332
247	321	331	336	333
248	322	332	337	334
249	323	333	338	335
250	324	334	339	336
251	325	335	340	337
252	326	336	341	338
253	327	337	342	339
254	328	338	343	340
255	329	339	344	341
256	330	340	345	342
257	331	341	346	343
258	332	342	347	344
259	333	343	348	345
260	334	344	349	346
261	335	345	350	347
262	336	346	351	348
263	337	347	352	349
264	338	348	353	350
265	339	349	354	351
266	340	350	355	352
267	341	351	356	353
268	342	352	357	354
269	343	353	358	355
270	344	354	359	356
271	345	355	360	357
272	346	356	361	358
273	347	357	362	359

APPENDIX B (continued)

STANDARD SDP LOGISTIC MEASURES				
SUBJECT	FLB	TAL	ELL	FLDS
26	111	95	8	49
27	112	97	8	50
28	109	95	8	46
29	117	97	1	51
48	96	88	7	37
Range	79-120	67-97	0-10	37-57
Mean	106.450	95.300	14.000	48.7
SD	13.760	8.178	10.400	10.077

FLB = Test of Language Development

TAL = Test of Auditory Comprehension of Language

ELL = Expressive Clinical Language Inventory

APPENDIX I

RAW DATA ON NONSTRUCTURED LINGUISTIC RECORDS OBTAINED IN RESPONSE
TO THE FUNCTIONAL INVENTORY OF COGNITIVE COMMUNICATION
STRATEGIES (FICCS) BY ALL SUBJECTS

APPENDIX 1

RAW DATA ON NONSTANDARDIZED LINGUISTIC MEASURES OBTAINED BY SUBJECTS
 IN THE FIRST LONG, EXERCISES OF COGNITIVE COMPARATION
 STAGES (PIECES) BY ALL SUBJECTS

NONSTANDARDIZED LINGUISTIC MEASURES								
TEST- PIECE	AGE	TIME	MLU-W	TIME	MLU-W	MLU-R	SCORE	TIME
1	130	330	4.34	600	4.40	4.4	54.00	4.30
2	125	315	4.07	600	4.50	4.4	50.00	8.30
3	113	300	5.11	601	4.00	4.3	70.00	4.30
4	110	300	4.00	500	3.40	3.0	51.00	2.30
5	60	230	3.04	300	3.40	3.2	53.00	5.30
6	100	300	4.00	345	3.10	3.0	43.00	5.00
7	100	311	4.07	300	3.10	3.0	43.00	4.10
8	120	317	3.00	390	3.00	3.0	43.00	3.00
9	100	417	3.07	444	4.44	4.4	40.00	4.00
10	60	203	3.04	344	3.00	3.0	60.00	5.00
11	120	351	4.30	600	3.00	3.0	50.00	7.30
12	150	303	4.00	310	3.00	3.0	70.00	4.30
13	110	1500	4.00	1715	2.40	2.0	70.00	10.30
14	90	300	3.00	444	2.10	2.0	50.00	4.00
15	110	330	4.00	400	3.40	3.0	60.00	2.30
16	110	300	4.00	340	2.00	2.0	60.00	3.00
17	120	1000	2.40	1000	3.00	2.0	70.00	10.30
18	110	300	3.00	1000	3.10	2.0	60.00	17.30
19	120	200	3.00	300	3.00	3.0	50.00	10.30
20	120	1411	3.00	1010	3.00	3.0	40.00	15.30
21	40	200	4.40	300	4.00	3.0	40.00	3.30
22	140	300	3.00	300	3.00	3.0	60.00	7.30
23	80	400	4.00	400	3.00	3.0	41.00	2.40
24	70	300	4.00	300	5.00	4.0	40.00	3.00
25	120	300	5.00	340	3.00	3.0	70.00	10.00
26	110	400	4.00	300	5.00	4.0	40.00	4.00
27	110	500	5.00	600	5.00	5.0	70.00	4.00
28	110	400	4.00	340	4.00	4.0	70.00	3.00
29	90	300	3.00	300	4.00	3.0	40.00	5.00
30	40	300	3.00	300	3.00	3.0	51.00	2.30
31	240	1000	5.00	1000	4.00	3.0	70.00	3.00
32	120	1100	2.00	1100	2.40	2.0	70.00	10.30
33	100	300	5.00	300	4.00	3.0	60.00	2.00
34	100	300	3.00	300	3.00	3.0	70.00	3.00
35	120	300	4.00	300	4.00	4.0	70.00	10.30

APPENDIX 1 (continued)

ANALYSIS OF THE LINGUISTIC MEASURES								
AGE- G17	FCU	TRW	MLU-W	TRR	MLU-R	MLU-R*	SDU%	SDI
24	118	744	4.71	805	4.53	19.2	45.45	14.38
27	121	747	7.49	809	6.08	25.8	43.42	14.59
30	127	1044	8.20	1040	7.08	28.1	43.78	17.00
33	126	911	6.05	706	6.20	18.0	26.42	12.44
40	114	847	7.43	903	6.44	17.4	51.89	12.48
Range	42-117	551- 1044	3.23- 8.21	449- 1040	3.03- 9.18	3.4- 28.1	16.47- 51.89	4.12- 17.14
Mean	116.30	773.18	6.41	811.40	6.20	18.86	38.40	8.75
SD	41.894	307.11	1.37	307.14	1.38	4.61	11.02	3.13

FCU's = Total Number of Communication Units

TRW = Total Number of Words

MLU-W = Mean Length of Communication Units in Words

TRR = Total Number of Receptions

MLU-R = Mean Length of Communication Units in Receptions

MLU-R* = Mean Length of the Free Language Communication Units in Receptions

SDU% = Percentage of Complete Communication Units

SDI = Developmental Sentence Score

APPENDIX J

RAW DATA ON MEASURES OF ACADEMIC ACHIEVEMENT FOR ALL SUBJECTS

APPENDIX 4

RAW DATA ON READING OF ADAPTED ACHIEVEMENT TEST FOR ALL SUBJECTS

TEST OF BASIC OPERATIONS				
SUBJECT	LANGUAGE	MATHEMATICS	SOCIAL STUDIES	SCIENCE
1	42	58	47	45
2	42	48	44	50
3	41	46	39	41
4	42	44	42	49
5	39	58	46	48
6	38	40	30	30
7	34	58	31	31
8	45	48	47	42
9	43	40	36	31
10	41	40	46	43
11	32	40	44	38
12	43	40	41	40
13	43	48	32	44
14	38	48	38	35
15	31	34	34	37
16	46	31	44	35
17	46	21	34	30
18	43	24	41	39
19	44	48	43	47
20	41	46	44	33
21	43	35	46	36
22	44	45	46	45
23	48	40	42	46
24	46	45	44	45
25	45	31	30	33
26	46	48	48	46
27	45	46	47	45
28	41	34	33	38
29	44	45	46	46
30	48	43	44	44
31	44	34	34	35
32	31	24	28	48
33	44	38	34	35
34	45	40	46	30
35	40	31	31	34

APPENDIX 4 (continued)

TEST OF BASIC SKILLS				
SUBJECT	LANGUAGE	MATHEMATICS	SOCIAL STUDIES	SCIENCE
34	66	68	73	66
37	66	74	68	63
38	66	76	73	65
39	67	74	64	64
40	67	68	58	66
Range	11-66	15-76	10-74	10-66
Mean	57.87	57.83	68.50	57.38
SD	11.75	11.81	16.81	11.35

1. Alden, S., Deaf-mute children and their language. New York: Grune and Stratton, Inc. (1970).
2. Allen, E. R., & Brown, R. L., Developmental communication competencies in children. Rockville, MD: National Textbook Company (1974).
3. Applebaum, P., & Farfel, B., Early language acquisition: A model and some data. In C. Ferguson & D. Slobin (Eds.), Studies in child language development. New York: Holt, Rinehart & Winston (1973).
4. Austin, J. L., How to do things with words. Cambridge, Mass.: Harvard University Press (1961).
5. Bachman, A. L., & Nichols, E. P., The study of mother-child interaction. American Scientist, 51, 704-721 (1959).
6. Bakken, B. G., Deaf-mute language acquisition. Edinb., Edinburgh University Press (1971).
7. Bates-Erickson, S., Bates, S. M., & Fenson, A., Children's learning for language disorders through word sample analysis: Preliminary report. Communication, 4, 8-11 (1964).
8. Bates-Erickson, S., Marshallita, C. B., Appleton, B., Disordered oral language sampling. Seattle, WA: The University of Washington and Publications, Inc. (1964).
9. Bates-Erickson, S., & Bates, S. J., Semantic categories in the language of severely children. Journal of Autism and Child Development, 4, 111-121 (1974).
10. Bates, E., Pragmatics and sociolinguistics in child language. In S. Greenfield & J. Marshall (Eds.), Pragmatics and sociolinguistics in child language. Baltimore: University Park Press (1974).
11. Bates, E., Language and context. New York: Academic Press, Inc. (1976).
12. Bates, E., Goodenough, L., & Sullivan, K., Acquisition of performatives after 18 months. British Journal of Psychology, 51, 205-225 (1961).
13. Bates-Erickson, S., Code switching in children's language. In S. E. Stern (Ed.), Deceptive development and the acquisition of language. New York: Academic Press (1971).
14. Bolinches, J. L., & Follingstad, D. R., Conversational performance of severely retarded adults in four conversational settings. Journal of Speech and Hearing Research, 51, 79-85 (1974).

- perfectionism, J., & Macnamar, J., The acquisition of routines in child language. Language in Society, 4, 132-134 (1984).
- Rosenstein, B., Lexical slots, linguistic order, and grammatical elements. Language and Speech, 5, 197-198 (1961).
- Rosenstein, B., Elitinated and reconstructed orders: Their social origins and new realizations. Annals Anthropology, 16, 55-69 (1964).
- Rosenstein, B., A sociolinguistic approach to social learning. In J. Gould (Ed.), Psychic society of the social organism. Baltimore: Harpout (1965).
- Rosenstein, B. (Ed.), Class, codes and control I: Towards a sociology of language. London: Routledge & Kegan Paul (1971).
- Rosenstein, B., (Ed.), Class, codes and control II: Towards a sociology of educational institutionalization. London: Routledge & Kegan Paul (1973).
- Sapir, P., & Snow, S. A., & Berlin, B., The preschool language observational instrument. Baltimore: University Park Press (1976).
- Sloan, L., Language development: Form and function in earlylinguistic growth. Cambridge, Mass.: MIT Press (1961).
- Sloan, L., & Slobin, D., Language development and language disorders. New York: John Wiley and Sons, Inc. (1970).
- Sloan, L., Lightfoot, P., & Snow, S., Structure and variation in child language. Annals of the Academy for Scientific in Child Development, 46, 46-148 (1961).
- Sokal, R., Scale test of social complexity. New York: Psychological Corporation (1957).
- Stecher, R. P., Early linguistic development: A cross-linguistic study with special reference to Finnish. Cambridge: Cambridge University Press (1974).
- Stewart, B., & Lepp, L., The preschool: A sociolinguistic approach to children's language development. In B. Fowler-Tipp and C. Wachsberger (Eds.), Child language. New York: Academic Press, Inc. (1977).
- Travis, J., What's the deal? Ethological Science, 21, 203-215 (1971).
- Wool, E. L., Barrett, E., Repner, S., and Harrison, E., A summary of communication experiments derived from observations on ravens. In E. E. Wilson and E. L. Wool (Eds.), Avian language communication: Current issues in child lang. Boston, MA: Academic Press Inc. (1976).

- Brown, R., A First Language: The early stages. Cambridge, Mass.: Harvard University Press (1973).
- Buck, R., & Tinker, R. E., Social class differences in the acquisition of school language. Harvard Educational Review, 34, 300-310 (1964).
- Bruner, J. S., The course of cognitive growth. American Psychologist, 19, 1-15 (1964).
- Bruner, J. S., Infants in significant growth. New York: John Wiley and Sons (1960).
- Bruner, J. S., From communication to language: A psychological perspective. Language, 3, 315-337 (1960).
- Bruner, J. S., The development of speech acts. Child Language, 8, 1-15 (1981).
- Bühler, K., Sprachtheorie. Die Darstellungsfunktion der Sprache. Jena: Fischer (1934).
- Burgess, R. E., Allen, L. B., & Lewis, J., Children's social language skills, 3rd edition. New York: Brunner, Mazur, Jovanovich, Inc. (1978).
- Carnoy, E., Test for children's comprehension of language. Austin, Tex.: Learning Concepts (1977).
- Carnoy, E., Carnoy elicited language inventory. Austin, Tex.: Learning Concepts (1974).
- Coates, E. B., Sociocultural differences in child language: An interim scholarly review. Harvard Educational Review, 34, 180-203 (1964).
- Coates, E. B., The ecological situation of child language research and education. Journal of Social Issues, 26, 55-66 (1970).
- Coates, E. B., Language. In Schachter, P. F., Gluckman, E., Klipp, E., Fildesick, R., & Sanders, K., Ecological perspective: Interdisciplinary speech studies: Psychological, developmental, and sociolinguistic studies. Monographs of the Society for Research in Child Development, 39, No. 134 (1974).
- Caplan, S. B., Book, A. T., Epstein, A. B., Parr, R. B., & Swenson, T. J., Language differences: Words, what, and how. Anthropological and Phonology, 3, 83-91 (1977).
- Chomsky, N., Language and nature. The Hague: Mouton (1965).
- Chomsky, N., Remarks on the theory of syntax. Cambridge, Mass.: MIT Press (1965).
- Chomsky, N., The acquisition of syntax in children from 5 to 10. Cambridge, Mass.: MIT Press (1965).

- Clark, E., What's in a word? On the child's acquisition of meaning in his first language. In E. Wiers, Ed., Language development and the acquisition of language. New York: Academic Press (1971).
- Clark, E., & Clark, E., Psychology of language. New York: Harcourt Brace Jovanovich Publishers (1977).
- Carlson, G., Frosting, C. A., & Lovell, E. L., Pragmatics and semantic development in young children with hearing impairing. Journal of Speech and Hearing Disorders, 31, 524-532 (1976).
- Chen, P., Language development: Structure and Function. Houndmills, 111, The Nelson Press, Inc. (1973).
- Chen, A., (Ed.), Language and learning in early childhood. London: Education Educational Books Ltd. (1970).
- Chen, E.-A., The development of linguistic skill in twins, singletons with siblings, and only children from age five to ten years. Child Welfare Monographs, No. 14. Minneapolis, Minn.: University of Minnesota Press (1971).
- Chen, E.-A., The development of language in twins - II: A comparison of twins and single children. Child Development, 3, 179-189 (1972).
- Chomsky, N. A., Speech: Its form and development. Houndmills, Houndmills Press (1971) (1972) (1973) (1974).
- Cole, J., A pragmatic description of early development. Journal of Psycholinguistic Research, 3, 343-350 (1974).
- Cole, J., Relationship between child and language universals. Journal of Child Language, 2, 81-98 (1975).
- Cole, J., Children's illocutionary acts. In E. Freedle (Ed.), Discourse: Descriptions and applications. New Jersey: Lawrence Erlbaum Associates (1976).
- Cole, J., In what way? A pragmatic analysis of children's responses to questions. In E. Freedle and E. Freedle-Gordon (Eds.), Discourse. New York: Academic Press, Inc. (1977).
- Cole, J., Variations in preschool children's conversational performance. In E. E. Nelson (Ed.), Children's language, Vol. 1. New York: Gardner Press (1978).
- Cole, J., Erickson, F., & Brown, G., The structure of nursery school conversation. In E. E. Nelson (Ed.), Children's language, Vol. 1. New York: Gardner Press (1978).
- Cole, W. J., & Miller, E. J., The study of language. Bell, Minnet and Warner, Inc. (1970).
- Cole, L., Psychological linguistic tests. Davis Press, Mass.; American Guidance Service (1974).

- Edwards, A. B., Speech order and speech variation: vocalic class and task differences in children's speech. Journal of Child Language, 3, 469-485 (1976).
- Greenberg, A. S., Schwartz, R., Keesen, J., Lambert, D., Rubin, P., Greenberg, P., & McMillen, P., The speech acquisition battery. New York: Wiley | Holt-Rinehart & Winston Academic Publications (1976).
- Greene-Strauss, S., Walls for an earlier class. In E. Greer-Frigo and C. Mitchell-Harman (Eds.), Child development. New York: Academic Press (1971).
- Greene-Strauss, S., & Mitchell-Harman, C. (Eds.), Child development. New York: Academic Press, Inc. (1977).
- Fullmore, C., The data for class. In E. Fuchs & R. T. Fuchs (Eds.), Advances in dyslexia theory. New York: Holt, Rinehart & Winston (1975).
- Fischer, A., & Logeman, J., Fischer language test of articulation competence. Speech, 111, 1. Houghton-Mifflin (1974).
- Frederick, N. R., & Goodrich, R., The age latencies of normal infants and those with brain damage. Journal of Psychology, 61, 724-734 (1964).
- Fryd, S., The study of functional communication competence in child development. In S. B. Allen and R. L. Brown (Eds.), Learning, memory, and communication in children. Boston, 111: 327-357. Houghton-Mifflin Company (1974).
- Foster, R., Miller, J., & Spark, J., Assessment of children's language comprehension. Austin, Tex.: Learning Concepts (1975).
- Franklin, A. R., A primer of strategies for communication. New York: Harcourt, Brace & World, Inc. (1964).
- Frederick, N. R., Arnold, A. C., Davis, E. B., & Williams, R. B., Fluency analysis of infant's natural language environments in the home. Child Development, 42, 730-740 (1971).
- Garnica, S., Acoustic and response in children's speech. Journal of Child Language, 3, 41-64 (1976).
- Geller, E. P., & Miller, E. B., A preliminary investigation of the communication competence of three linguistically impaired children. Paper presented at the New York State Speech and Hearing Association, Library, New York (1974).
- Goldman, E., & Peterson, R., The Goldman-Fristoe test of articulation. Circle Pines, Minn.: American Guidance Service, Inc. (1962).

- Greenfield, P. & Smith, J., The structure of communication in adult language development. New York: Academic Press (1981).
- Hall, R. P., Logic and conversation. In P. Cole and J. R. Hayes (Eds.), Speech and cognition, Vol. 3, Speech acts. New York: Academic Press (1982).
- Hall, R., Analysis of short-term dialogues in 1-2 year-olds: Encoding of information and modifications of speech acts as a function of negative feedback loops. Paper presented to the Third International Child Language Symposium, London (1984).
- Halliday, M. A. K., Language structure and linguistic function. In J. Lyons (Ed.), New formalist in linguistics. Baltimore: Penguin Books (1980).
- Halliday, M. A. K., Explorations in the functions of language. London: Edward Arnold (1978).
- Halliday, M. A. K., Learning how to mean. London: Edward Arnold (1975).
- Halliday, M. A. K., Language as social activity. Baltimore: University Park Press (1980).
- Hart, R., Reflection of the High-School years language curriculum model for bilingual educational preschool programs. Bethesda, Md.: High-School Educational Research Foundation (1980).
- Hartshorn, E. P., Applied linguistics analysis. Northridge, Calif.: Joyce Kocum, Ph.D. (1979).
- Hartson, R. P., Language acquisition and development in the child: A teacher-child verbal interaction. Elementary English, 51, 234-236 (1980).
- Hess, E. E., Personal behavior and children's school achievement: Implications for Head Start. In E. Rothberg (Ed.), Critical issues in research related to disadvantaged children. Arlington, Va.: Educational Testing Service (1981).
- Hollingshead, A., A four-factor index of social position. New Haven: Yale University Press (1961).
- Hopper, R., Regarding the nature of competence. The Speech Teacher, 18, 25-26 (1970).
- Hopper, R., & Hartson, R., Children's speech: A practical technique for an accelerated development. New York: Harper & Row (1977).
- Hurt, J. W. R., Intelligence and experience. New York: Knopf (1941).
- Hyman, R., On communication competence. Philadelphia: University of Pennsylvania Press (1976).

- Bryson, B., Introduction to C. B. Lewis, V. P. Jaks & B. Bryson (Eds.), Facilities of language in the classroom. New York: Teachers College Press, Columbia University (1962).
- Bryson, B., Models of the interaction of language and social life. In J. A. Soper & B. Bryson (Eds.), Facilities in socialization. New York: Holt, Rinehart and Winston, Inc. (1968).
- Chomsky, N., Choosing grammars: Linguistics and grammar. In T. A. Sebeok (Ed.), Birth in language. Cambridge, Mass.: MIT Press (1965).
- Johnson, W., Garley, P. L., & Spenser-Smith, M. C., Comparative methods of speech perception. New York: Harper & Row (1967).
- Kaplan, A. T., Semantic and expressive development in children's narratives. In L. Erickson & L. Minkoff-Karni (Eds.), Birth of a story. New York: Appleton Press (1977).
- Lahm, M., The types of nonstandard English. In P. Williams (Ed.), Language and society. Chicago: Markham (1961).
- Larsen, E., Rasmussen, P., Rasmussen, R., & Rasmussen, A., Language and social communication. Pullman, WA: Washington State University (1972).
- Lee, L., Speech and syntax according to age. Evanston, Ill.: Northwestern University Press (1961).
- Lee, L., Developmental language analysis. Evanston, Ill.: Northwestern University Press (1971).
- Leinhardt, L. B., What is universal language? Journal of Speech and Hearing Disorders, 20, 440-444 (1955).
- Leinhardt, L. B., Bolters, J. G., & Miller, J. A., An evaluation of the remedial solutions offered to the usage of normal and language-disordered children. Journal of Speech and Hearing Research, 10, 271-282 (1969).
- Liben, J., Developing competence, performance and pragmatics in the speech of young children. Journal of Child Language, 1, 303-318 (1974).
- Loken, M., The language of elementary school children. Irvine, Ill.: National Council of Teachers (1960).
- Loken, M., Language development: Kindergarten through grade twelve. Irvine, Ill.: National Council of Teachers (1974).
- Loren, E. P., Scientific and practical language planning. Berkeley, Cal.: Aspen Systems Corporation (1961).

- Levin, R. B., The directive function of speech in development and utilization. Lang., 10, 261-262 (1935).
- MacDonald, J. B., & Richards, R., Developmental language literature annual. Columbia, Mo.: State State University (1934).
- Robinson, R. J., An ethological approach to delayed language acquisition. American Journal of Mental Hygiene, 48, 419-443 (1935).
- Reichman, R., The problem of meaning in primitive languages. Supplement 1. In E. R. Soper and L. A. Richards, The meaning of meaning. London: Routledge and Kegan Paul (1933).
- Roberts, R. B., The language development of the preschool child. Child Welfare Monographs, No. 4, Minneapolis, Minn.: University of Minnesota Press (1934).
- Roberts, R. B., Language development in children. In L. Carmichael (Ed.), Handbook of child psychology. New York: John Wiley & Sons (1934).
- Roberts, R. B., Delayed development of articulation. Pittsburgh: Science & Sons (1935).
- Roberts, J. E., & Roberts, L. B., A transactional approach to early language studies. Columbia, Mo.: Center for Mental Pathology Group (1934).
- Roberts, R. J., The acquisition of language: The study of developmental psychopathology. New York: Harper & Row (1934).
- Roberts, R. J., Emotional children and language. Cambridge, Mass.: The MIT Press (1935).
- Roberts, J. E., & Roberts, L. B., A systemic teaching program. In J. Roberts, R. Roberts, L. B. Roberts (Eds.), Language intervention with the retarded. Baltimore, Md.: University Park Press (1934).
- Roberts, L., Frustration and early childhood language disturbance: Descriptive observations on a North-west sample. Journal of Speech and Hearing Disorders, 40, 419-436 (1935).
- Roberts-Lerman, L., & Roberts, R. B., Frustration of directed speech among children. In L. Roberts-Lerman & R. Roberts-Lerman (Eds.), Child language. New York: Academic Press (1934).
- Roberts, J. A., Teaching the concepts of dynamics. Boston: Houghton Mifflin (1934).
- Roberts, L., Foundations of the theory of signs. Chicago: University of Chicago Press (1934).
- Roberts, R., The social sign. New York: McGraw-Hill (1935).

- Rees, R. R., Test of early experience. Harroway: Columbia Hill 1931.
- Rosenblith, W. R., Three variations of the imperative format of language acquisition. (unpublished Master's thesis, University of North Carolina at Chapel Hill 1950).
- Savory, E., The learning of communication rules and norms. In R. A. Hinde and E. L. Snow (Eds.), Developing communication competence in children. London, H.K. Butterworth 1960.
- Sellars, E., Structure and strategy in learning to talk. Proceedings of the Society for Research in Child Development, 24, No. 14 1959.
- Sellars, E., Concept, word and sentence: Interrelations in acquisition and development. Psychological Review, 61, 140-185 (1954).
- Stevenson, R., & Hewitt, G., Test of language development. Austin, Tex.: Grylls Press 1959.
- Wassily, J., Psychiatric theory. New York: McGraw-Hill 1940.
- O'Connell, E., Griffin, E. J., & Davis, R. C., Test of kindergarten and elementary schools: A psychometric analysis. National Council of Teachers of English Research Report Number 8, Chicago, 111.: National Council of Teachers of English 1961.
- Smith, R. L., Jr., Speech acts in the early language of non-delayed and retarded children: A taxonomy and distributional study (Doctoral dissertation, Ohio State University, 1961). Quarterly Journal of Experimental Psychology, 1969, 22, 1203-1212. (Available Microfilm).
- Playch, J., The language and thought of the child. New York: Harcourt, Brace and World 1951.
- Postell, E. A., Progress: The action of reading forward progressively from one point to another on the way to completion. Journal of Speech and Hearing Disorders, 14, 3-30 (1949).
- Rees, R., Propagates of language. In R. L. Lachelschuss (Ed.), Test of language interaction. Baltimore: University Park Press, 1971-1981.
- Ricks, G. W., Vocal communication in pre-verbal normal and autistic children. In R. E. Gosser (Ed.), Language, cognitive deficits and retardation. London: Butterworth 1961.
- Ricks, G. W., & Wieg, C., Language, communication and the use of symbols in normal and autistic children. Journal of Autism and Child Development, 1, 24-31 (1970).
- Wall, E. R., Social functions of children's speech. Journal of Communication, 28, 39-46 (1974).

- Brun, J., Early language development: Towards a communicational analysis. In R. F. A. Richards (Ed.), The acquisition of a child's language in a social world. London: Cambridge University Press, 189-212 (1984).
- Chang, S., Communicative competence among the severely retarded: Some evidence from the conversational interaction of Anne's syndrome (unpublished study). Paper presented at the Linguistic Society of America, San Francisco (1981).
- Schwartz, F. F., Kirsner, K., Ellis, S., Friedlander, R., & Sanders, K., Everyday preschool interpersonal speech acts: Psychological, developmental, and sociolinguistic studies. Monographs of the Society for Research in Child Development, 50, 61-124 (1984).
- Schoffner, A. R., The growth of variability. Baltimore, MD: Penguin Press (1978).
- Schultz, S., & Erickson, R. T., Early predictors of mental retardation. Social Development, 14, 83-95 (1983).
- Seuren, J.-B., Speech acts: An essay on the philosophy of language. London: Cambridge University Press (1981).
- Seuren, J. B., & taxonomy of speech acts. In R. Gunderson (Ed.), Language, mind, & knowledge: Minnesota studies in the Philosophy of Science, Vol. VII. Minneapolis, Minn.: University of Minnesota Press (1982).
- Shard, L., Long relationships between measures of early language development. Journal of Speech and Hearing Disorders, 37, 84-94 (1972).
- Shatz, S., & Ellis, R., Influence of CA and IQ levels on structure and amount of continuous verbalization. Psychological Reports, 35, 229-231 (1974).
- Slone, C. E., Communicative competence: A functional-communicative approach to language theory. Tucson, Arizona: Communication Skills Builders (1980).
- Spanakis, H. A., & Proffing, E. A., Early communication: Semantic, syntactic and communicative interaction in the communication of the preschool child with impaired hearing. American Annals of the Deaf, 118, 284-291 (1973).
- Stinner, R., Speech Behavior. New York: Appleton-Century-Crofts (1960).
- Stokke, B. T., Universals of grammatical development in children. In G. B. Flores d'Arcais & M. J. A. Bevels (Eds.), Advances in memory. Amsterdam. North-Holland Publishing (1980).
- Stokke, B. T., Psycholinguistics. Clarendon, 111. Scott, Foreman & Co. (1979).

- Leikin, R. E., A study of some factors influencing the development of the sentence in preschool children. Psychological Monographs and Journal of Abnormal Psychology, 48, 442-271 (1955).
- Myer, L. S., Prosopics in language-disabled children: Their phonological and early written orthographic and prosopologies. Master United doctoral dissertation, University of Colorado (1970).
- Neilsen, W. F., & Johns, E. P., The study of spontaneous talk. In E. S. Sarter (Ed.), Stimuli of Behavior. New York: Appleton-Century-Crofts (1955).
- Quinby, R., The language barrier to education. In S. E. Purves (Ed.), Interdisciplinary approaches to language. London: Center for International Language Teaching Reports and Reports, 1 (1971).
- Taniguchi, J. L., & Fisher, S., Content and sequence analysis of communication interaction: A research note. Paper presented at the American Speech and Hearing Association Convention, San Francisco, California (1970).
- Trope, J., Learning to listen, talking. Garden View Lock Educational (1962).
- Trope, J., The development of meaning. New York: John Wiley and Sons (1970).
- Troutman, C. B., & Friedman, J. A., Normal language development: The key to diagnosis and therapy for language disordered children. Baltimore: Williams and Wilkins Co. (1960).
- Truck, R., & Gottschman, R., Language sampling, analysis and analysis. Palo Alto, Calif.: Consulting Psychological Firm (1960).
- Whalen, W. E., Maclean-Whalen, S., & Rappaport-Hovav, S., The assessment of communicative competence in aphasia. In S. E. Bruckstein (Ed.), Clinical psychology conference proceedings. Minneapolis, Minn.: S. S. S. Publishers (1970).
- Wynne, L. E., Thought and language. Cambridge, Mass.: MIT Press (1962).
- Walker, F., Phonological process analysis. Baltimore, Md.: University Park Press (1963).
- Wills, E., Testing manual for the description of child speech. Bristol School of Education (1970).
- Wills, E., Language use and educational success: An empirical response to Jean Piaget's "The development of reading." Research in Education, 18, 1-24 (1970).

- White, R. L., Fundamental early environmental influences on the development of competence. In R. E. Meyer (Ed.), Third symposium on children on learning, cognitive learning. Springfield, Mass.: Charles C. Thomas, 1969.
- White, R. L., & Levin, G. A., Speech act analysis of spoken communication for individual and group settings. In R. H. Boushshier (Ed.), English as a second language conference proceedings. Philadelphia, Pa.: G. C. C. Publishers, 1973.
- Williams, F., & Newman, R. C., On the functional analysis of social class differences in modes of speech. Speech Monographs, 34, 77-103 (1969).
- Williams, F., & Newman, R. C., Social class differences in children's syntactic performance: A quantitative analysis of field study data. Journal of Speech and Hearing Research, 12, 377-383 (1969).
- Wingenshield, L., Philosophical investigations. Oxford: Basil Blackwell & Co., 1969.
- Mallory, G. S., & Miller, E., How to evaluate communication in a non-able project. Paper presented at the American Speech and Hearing Association Convention, Houston, Texas (1970).
- Mead, R. L., Children and communication. Englewood-Cliffs, N.J.: Prentice-Hall, Inc., 1974.

But he married another R. Johnson and they have one son,
Joseph Edward.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


Thomas B. Abbott, Chairman
Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


Anthony J. Clark
Associate Professor of Speech

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


David P. Richter
Associate Professor of Speech
Coordinator of Instruction
Audiology and Speech Pathology Service
Veterans Administration Hospital

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.


James C. Harder
Professor of Linguistics

This dissertation was submitted to the Graduate Faculty of the Department of Speech in the College of Liberal Arts and Sciences and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

August, 1981

Dean, For Graduate Studies and Research